DEC 22 1920

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Fifty-second Annual Session, Lynchburg, Va., 1921

VOL. 47, NO. 9
WHOLE NO. 822

RICHMOND, VA., DECEMBER, 1920

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

By R. K. Flannagan, M. D., Richmond, Va. 401
Co-operation of the Physician in the Tuberculosis Fight.
Co-ordination of Anti-Tuberculosis Agencies. By Walter C. Klotz, M. D., Charlottesville, Va. 403
Mouth-Breathing. By E. E. Watson, M. D., Salem, Va. .. 407
Curbing Tuberculosis.—Two Suggestions of At Least Tentative Value. By Stephen Harnsberger, M. D., Catlett, Va. 408
X-Ray in Pulmonary Tuberculosis. By J. T. McKinney, M. D., Roanoke, Va. 410
Interpretation of Signs and Symptoms in Pulmonary Tuberculosis. By H. G. Carter,, M. D., Burkeville, Va. 412
The Local Tuberculosis Clinic. By Charles R. Grandy, M. D., Norfolk, Va. 414
Inconstant Blood Pressure. By Garnett Nelson, M. A., M. D., Richmond, Va. 418
Biology and Modern Medicine. By Charles Minor Blackford, M. D., Staunton, Va. 422
The Venereal Disease Problem. By W. D. Kendig, M. D., Kenbridge, Va. 428
The Control of Venereal Diseases. By E. L. Kendig, M. D., Victoria, Va. 431
Idiopathic and Traumatic Ileus. By A. G. Payne, M. D., Greenville, Miss. 434
The Public and Its Medical Society. By D. L. Harrell, M. D., Suffolk, Va. 437
Renal Lithiasis. By A. I. Dodson, M. D., Richmond, Va. ... 439
THE TRUTH ABOUT MEDICINE 442
CORRESPONDENCE 445
PUBLIC HEALTH 446
SECRETARY'S ANNOUNCEMENT 446
MEDICAL EDUCATION 447
PROCEEDINGS OF SOCIETIES 451
BOOK ANNOUNCEMENTS 453
EDITORIAL 454
NEWS NOTES 460
OBITUARY RECORD 467

FOR MEDICAL SOCIETY AN NOUNCEMENTS SEE PAGE 8.

INDEX OF ADVERTISERS—Advertising Page 5.

WILLIAM D. SISK, President — S. F. STEPHENS, Vice-Pres.

Quality Instruments

at Moderate Prices

Service *Appreciation*

Hospital Supplies — Abdominal Supports

Red Cross Dressings — Elastic Hosiery

Rubber Goods — Electrical Equipment

Prices on Application

The Physicians and Surgeons Supply Co.

412 Monticello Avenue, **Norfolk, Virginia**

Just Published

PSYCHO-PATHOLOGY

By **Edward J. Kempf, M. D.,** Clinical Psychiatrist to St. Elizabeth's Hospital (formerly Government Hospital for the Insane), Washington, D. C.; author of "The Autonomic Functions and the Personality." 762 pages + xxiii, 6¾ by 9¾, with 97 illustrations. Printed on beautiful India Tint paper, and bound in silk cloth binding, with gold stamping. Price, $9.50.

A complete book, elaborating the new epoch in the study and treatment of the adjudicated insane.

Abnormal behavior is one of the most interesting topics for study. When the principles underlying it are mastered, many mysteries that have perplexed medical men, criminologists, and lawyers are solved. Doctor Kempf has rendered a real service to physicians in the writing of "PSYCHOPATHOLOGY."

PARTIAL TABLE OF CONTENTS

The Physiological Foundations of the Personality; The Psychology of the Family; The Universal Struggle for Virility, Goodness and Happiness; Influence of Organic and Functional Inferiorities upon the Personality; Mechanistic Classification of Neuroses and Psychoses Produced by Distortion of Autonomic-Affective Functions; The Mechanism of the Suppression or Anxiety Neuroses; Repression or Psychoneuroses, Their Mechanisms and Relation to Psychoses Due to Repressed Autonomic Cravings; Benign Compensation or Regression Neuroses, with or without Dissociation of Personality; Manic-Depressive Psychoses; Elimination or Simulation for Wish-Fulfillment in Affective Crises; Pernicious Repression Compensation Neuroses; The Psychopathology of Paranoia; The Psychopathology of the Acute Homosexual Panic; Acute Pernicious Dissociation Neuroses; The Psychopathology of Chronic Pernicious Dissociation of the Personality with Defensive Hatred, Eccentric Paranoid Compensations and Pernicious Deterioration; The Psychopathology of Chronic Pernicious Dissociation of the Personality with Crucifixion and Catatonic Adaptations to the Repressed Cravings; The Psychopathology of Chronic Pernicious Dissociation of the Personality with Hebephrenic Adaptations; Predominance of Excretory Erotic Interests; Reconsideration of the Conditioned Autonomic Affective Determinants of Abnormal Variations of Behavior; Psychotherapeutic Principles.

The book is handsomely printed on India Tint paper, and the illustrations are beautiful specimens of the engraver's art.

☞ **Order your copy Today through your Bookseller, or direct from the Publishers. Mention this Journal.**

The C. V. Mosby Co.--*Medical Publishers*--St. Louis, U. S. A.

The Management of an Infant's Diet

In extreme emaciation, which is a characteristic symptom of conditions commonly known as

Malnutrition, Marasmus or Atrophy

it is difficult to give fat in sufficient amounts to satisfy the nutritive needs; therefore, it is necessary to meet this emergency by substituting some other energy-giving food element. Carbohydrates in the form of maltose and dextrins in the proportion that is found in

MELLIN'S FOOD

are especially adapted to the requirements, for such carbohydrates are readily assimilated and at once furnish heat and energy so greatly needed by these poorly nourished infants.

The method of preparing the diet and suggestions for meeting individual conditions sent to physicians upon request.

MELLIN'S FOOD COMPANY, BOSTON, MASS.

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

VOL. 47, NO. 9.
WHOLE NO. 822.

RICHMOND, VA., DECEMBER 1920.

$2.00 A YEAR
20 CENTS A COPY

Original Communications

CO-OPERATION OF THE PHYSICIAN IN THE TUBERCULOSIS FIGHT.*

By R. K. FLANNAGAN, M. D., Richmond, Va.
Director Virginia Tuberculosis Association.

Tuberculosis is coming under control. Even with the poor reporting that existed back in 1915, there were 4003 deaths from this disease recorded at the Bureau of Vital Statistics. In 1919 the figures were only 3355, a reduction of 648 deaths in four years' time.

This reduction is due mainly to the co-operation of Virginia physicians, their improved morbidity reports, their improved diagnostic methods, their frankness in early telling the whole truth to patients, and their belief in modern methods of cure. That this reduction is not greater by far is also due to physicians, but not the same physicians. There are many doctors yet in Virginia whose cases of advanced tuberculosis day by day knock at the doors of our sanatoria too late for human help. Far be it from me to take such physicians too severely to task for failure to detect a disease in its incipiency that sometimes puzzles experts even in the moderately advanced stage. Few doctors, I fancy, are in a position to throw many stones. There is, however, less excuse now than there used to be. The whole medical profession is now fully convinced that they are not reading death warrants to patients when they diagnose tuberculosis in the early stages and so the greatest bar to frankness is forever removed. It is not difficult now for a tender-hearted doctor to tell the whole truth.

The following limericks tell in "before and after" form the whole story:

M. D.—T. B.—N. G.
A weak, tender-hearted M. D.
Had a patient with early T. B.
He called it a cold
And the lie that he told
Catalogued that M. D. as N. G.

To the contrary—

OH BLISS!
A competent doctor named Bliss
Had a case of tu-ber-cu-lo-sis.
He told the whole truth
And now a bright youth
A nice, shiny coffin will miss.

The number of object lessons in every neighborhood—arrested cases of tuberculosis from Catawba, Blue Ridge, Piedmont, Saranac Lake, Asheville, and elsewhere—may be pointed out as examples of the fact that death and early diagnosed tuberculosis have parted company. The up-to-date physician is therefore on the "*qui vive*" with respect to his own patients and even with the house contacts of those patients. All of you, however, will readily agree that this is not enough if the disease is ever to be controlled. Every physician knows that tuberculosis is so insidious that the damage is done oftentimes before he gets a chance to advise. It is the neglected case and its contacts, therefore, that constitute the problem, and upon this class of cases must the attack be made.

It is upon this case, that the doctor sees only casually or not at all, that the Virginia Tuberculosis Association seeks to concentrate its efforts. The Association appeals to the medical profession for a fuller co-operation than has heretofore been given. It is in a better position now than ever before to claim their confidence and support.

The Association has recently adopted a new constitution which is designed to broaden the work and bring about a greater participation in its affairs by interested people throughout the State. There are sixty-eight representative and influential men and women from all over

* Read as part of the Symposium on Tuberculosis, at the fifty-first annual meeting of the Medical Society of Virginia, in Petersburg, October 26-29, 1920.

the State now on the Board of Directors, twenty-three of whom are graduate physicians. The plans for the coming year contemplate the organization of local committees or the utilization of existing organizations to expend for tuberculosis work a heavy proportion of the proceeds of the tuberculosis Christmas Seal fund in the locality in which the money is raised. An important part of the State Association work will be the seeking out of early cases through a series of clinics sponsored, and as far as possible conducted, by the heads of the State Tuberculosis Sanatoria. As far as means permit, follow-up work will also be done. Under this plan, seventeen counties were visited during the past twelve months by clinicians holding four day free chest clinics. Over 6000 Virginia people have had their chests examined by specialists in these clinics and hundreds of incipient cases found. This plan is to be continued, and if possible, enlarged in scope. These clinics find the case that does not go to the doctor and examine the cases that the doctor brings or sends. Every doctor in the community, whose name and address we know, is always notified in advance of the clinic. Whatever morbid condition is found is reported to the family physician.

The Association, too, is trying to stimulate the building of local sanatoria for tuberculous patients. A bed for every death is said by experts to be a most conservative estimate of the actual need. This would mean that Virginia needs over 3000 beds for tuberculous patients. She has approximately 600, counting private sanatoria. It is hoped that before hospital facilities have reached the total of our present mortality, our tuberculosis problem will, by the general improvement in hygiene and sanitation and in the knowledge of prevention of disease, have contracted to proportions less appalling.

Thirty-three hundred known deaths last year from one preventable, curable disease! Shall we not as physicians at least inquire whether our participation in the fight against this disease is all that it should be? The campaign against tuberculosis is a campaign in a war against disease in general, and warfare, to be successful, means organization. Guerrilla fighting is a phase only of the beginning of successful warfare. (The later stage only of unsuccessful warfare). We have now passed that stage. The assistance of individual doctors in the clinic work of the Association, except for a few instances, has been splendid, but it has not been co-ordinate, and, in this lack of unity of purpose among physicians, lies the greatest weakness from which the campaign suffers. The doctors almost always co-operate with the clinicians and, in the main, are friendly to each other, but as a body they lack the cohesion necessary to get the best results in meeting community problems, and the control of tuberculosis is distinctly a community problem. Physicians are very poorly organized to meet their common difficulties and to achieve their common purposes. In my judgment, the best way the medical profession can co-operate in the tuberculosis fight, the typhoid fight, the infantile diarrhœa fight, the venereal disease fight, the pneumonia fight and the fight against every other kind of preventable condition that promotes death—and it is to the postponement of death their efforts from time immemorial have tended—is to get together in compact organizations and, while reporting their cases and recording their successes and failures, not forget to put in their program each time a topic relating to community health and welfare.

The doctor by tradition and training is an individualist and much of his scientific advance has been the result of this individualistic attitude. He is, however, now living in a highly organized world that is getting more and more communistic as time goes on. He must gravitate more towards his fellows and cohere, and as he arrives at a better understanding with them, as their common aims and purposes become known and appreciated for what they are—and the doctor's citizenship takes the meaning that the boost of his brothers will inevitably stamp upon it. Disease, his hitherto unconquered antagonist, will yield its community strongholds to united attack and the doctor, as a conservator, as well as a healer, will come into his own. The old order changeth. Read the signs of the times and, with open mind, face with unity whatever problems it brings. For in union alone there is strength. Tuberculosis control is but one of the problems challenging your attention. Your united help can solve it. Divided as you now are, this and many other community problems pass for their solution (and make no mistake.

these problems will be solved) into other hands less qualified for the task.

I urge you, therefore, to strengthen your local medical societies by every means in your power and let no engagement not of life and death proportions prevent your attendance and active participation in their deliberations.

CO-ORDINATION OF ANTI-TUBERCULOSIS AGENCIES.*

By WALTER C. KLOTZ, M. D., Charlottesville, Va.
Medical Director of Blue Ridge Sanatorium.

At the close of the war, the period of adjustment following the armistice and demobilization was naturally a time for serious reflection and consideration of what had been accomplished in our fight against tuberculosis during the last thirty years. It was the logical time to take stock, as it were, to make a critical analysis of the various methods that had been employed in this campaign and to ascribe to each its practical value and share in the results that have been brought about. Those of us who gave up our work at home to follow some anti-tuberculosis activity abroad were fortunate in obtaining a double perspective and broader view of the situation. Obliged, on the one hand, to make comprehensive surveys of problems to be met, we were naturally forced, on the other, to consider more critically and carefully the American methods of procedure we were trying to introduce and apply.

Thus, in studying the situation in France, the most striking feature that met us was the lack of a *comprehensive scheme of organization* and the absence of a unified plan of attack. We were struck by the brilliancy and genius displayed in isolated instances, but encountered on many sides a marked tendency to *individualism*. There was no national tuberculosis association or any other national scheme of publicity and education which could organize a generalized programme. The result had been that so many efforts remained localized.

While some of the most epoch-making discoveries had had their origin in France, so much so that the introduction of American methods might even seem a presumption, they had never been co-ordinated with any broad scheme of application. The principal efforts had been directed toward study and research along bacteriological lines, the tubercle bacillus, immunology, and prevention of infection. But, except in a few instances, little attention had been paid to the immense social background of tuberculosis wherein are grouped the many interacting, and correlated predisposing factors that play the more important part in the development or evolution of clinical active tuberculosis.

Reflecting from our experience abroad, it was only natural, once we were ready to resume our work at home, that we should search more carefully our own methods and be more awake to the defects and faults of our own campaign against tuberculosis. In this spirit of self criticism we found that, to a certain extent, some of the faults that we had found abroad existed also in our own country. It has come to be accepted by many, that we too have spent too much energy along the lines of infection instead of paying more attention to the predisposing factors, such as sanitary conditions of homes, factories and schools, personal hygiene and the many social errors that lie at the bottom of the whole question; the real causes that bring about the development of manifest tuberculosis as distinguished from simple infection.

The other point that has been brought out by this study is the fact, that in the campaign against tuberculosis we have been seriously handicapped by the lack of more active and more general co-operation on the part of the practising physician, particularly the general practitioner in the rural portions of our country. The details in this connection will be brought out more fully after we shall have considered certain general aspects of the tuberculosis problem.

It is not in place here, nor is it the purpose of this paper to enter into any academic discussion of such questions as *immunity through infection* or *superinfection in the adult*. It may be safer not to take too extreme a view or to assume that any immunity that has been acquired by infection is absolute. Massive infection should always be guarded against, especially in young people. Because we vaccinate successfully against smallpox and typhoid fever, we do not necessarily abrogate former precautions as to quarantine or protection of water supply. Prevention of infection would

*Read as part of the symposium on Tuberculosis, at the fifty-first annual meeting of the Medical Society of Virginia, in Petersburg, October 26-29, 1920.

undoubtedly be the ideal to strive for, but it seems impossible to realize, while on the other hand we can bring about practical results by diminishing or ameliorating the predisposing factors. It would seem wiser, therefore, in our general propaganda at least, to modify the information given out to the public, in order to allay phthisiophobia which has developed to such an extent as to obstruct the very measures that would make far greater safety and protection of the community.

One point that should be brought out and emphasized repeatedly, however, is the fact that exacerbations of chronic tuberculosis which we meet with clinically are not the result of recent infection but represent only one episode in the long course of tuberculosis infection, in that particular individual. The correct conception of this fact has a very important bearing upon our attitude toward the tuberculosis problem. If in a given case, for example, there is a history of occasional exposure to infection, one year or six months ago, and the patient on examination presents the physical signs of a chronic fibrocaseous process obviously of years' standing, it may be very consoling to a relative, to be able to tell him definitely, that such recent exposure was not the source of the disease. Many cases of supposed conjugal infection are probably the result either of coincidence or living under the same unfavorable environment. It is certainly difficult to prove the fact of infection in these cases.

In the prevention of tuberculosis we must seek out and remove the factors that lie in environment. We must search for and discover the individual before the disease becomes manifest. We talk glibly about removing an advanced open case of tuberculosis from the home in order to protect the rest of the family from infection, when the condition has probably existed for some years, and all the members of the family have been infected long ago. The proper time to prevent infection would have been before the disease had become active and the case an open one. Under such circumstances the most efficacious plan of prevention would be to build up the resistance of the children in such a family, in order to prevent infection, which presumably has taken place, from developing into active clinical disease. It will be a more profitable investment to see that such children have a healthier environment, that they are better housed, that they are better fed, that their resistance is not further impaired by physical defects, that their immunity is not undermined by long hours in poorly built and badly ventilated school houses; that they are protected after they leave school and begin to seek a livelihood by a proper inspection and control of factory and labor conditions. It is along such lines that our educational and awakening propaganda should be directed. We have devoted too much time on the tubercle bacillus itself, when we could have expended our efforts more profitably by making the soil unfavorable and thus rendering the germ harmless. This must not be interpreted as deprecating the research work of the laboratory. Its contributions have been invaluable and the search for a remedy for tuberculosis has been the incentive to some of the greatest discoveries in immunology. But for the purpose of popular education and as a basis for a social campaign against tuberculosis, we shall accomplish more if we accept the ubiquity of the tubercle bacillus, if we acknowledge the hypothesis of childhood infection, and the latency of tuberculosis; if we start out in our attack with the assumption that the average adult of civilized races is relatively immune against external superinfection, as a result of that childhood infection, and that our efforts toward prophylaxis, as well as those of treatment, must be based upon the hygienic principles, that will bring about the greatest resistance, the greatest degree of immunity and the maximum antibody production.

Taking up the tuberculosis problem of Virginia we find that it is a fairly formidable one, not only because of the number of cases existing, which can only be approximated on the basis of the mortality figures, but also for the reason that it is so largely a rural problem and therefore presents a number of difficulties. There is, furthermore, the factor of tuberculosis of the colored population which in itself constitutes a matter for serious study and contemplation. It has been difficult to make a very satisfactory study of the mortality statistics for the reason that Virginia was not added to the registration area until 1912. For that reason a very exact determination of the various curves for urban and rural, or for white and colored, is not feasible. Nor is it possible,

with the figures at our disposal, to make accurate curves for the differential tuberculosis mortality, and show variations in the different forms of tuberculosis. However, the curves for the last five years, showing an annual number of deaths averaging more than 3,000, would make it safe to assume that there are at least 18,000 open active cases of tuberculosis, with an additional 18,000 less advanced but active cases, at any one time.

There are at the present time 400 beds for white patients and only 100 beds for colored patients in the State Sanatoriums, with probably less than 100 additional beds for indigent or semi-indigent patients in all other institutions in the State. For the greater number of existing cases, therefore, there are no facilities for institutional treatment. But, even if such facilities did exist, it is safe to assume that most of the beds would remain vacant unless other co-ordinated agencies were to be established in order to bring these patients in touch with such institutions. The sanatorium operating alone as an isolated agency would fail to reach most of them. However, there are probably not more than four tuberculosis dispensaries existing at the present time, all located in the larger cities. No permanent tuberculosis dispensaries have been established for the rural population, although an attempt to establish them has been made in one county.

There is obviously great need therefore for more extensive organization and better machinery in order to search out and discover the greater number of patients, many of whom are unaware of their condition, not taking any treatment, observing no precautions toward preventing the further development of their malady. In order to bring them under control for purposes of education as much as for treatment, there is urgent demand for a comprehensive system of dispensaries which must, however, be permanent institutions. There must be an adequate staff of public health visiting nurses operating out from these dispensaries to reach the most remote mountain settlements and to bring the patients to the dispensaries for examination and diagnosis each regular clinic day. Such dispensaries should work with the local practising physicians and provide the services of a full-time tuberculosis specialist, who shall act in a consulting capacity, co-operating with the local physicians, but not undertaking to prescribe for or treat any patients, unless they are too poor to pay a private physician; or only if requested by the family physician.

In suitable cases, the dispensary consulting physician should recommend institutional treatment through the family physician, but should not refer patients directly for admission. For the rural communities, it would be sufficient to hold such dispensary sessions once in two weeks, the personnel being furnished by or through a central dispensary located in the principal city of the county. The intervals between dispensary sessions should be used by the nurses for intensive follow-up work and individual education and demonstration. Special diagnostic features, such as X-Ray, laryngeal and other special examinations, could be provided at the central dispensary to which patients from the rural dispensary would be referred. The central dispensary might well be connected with a local hospital.

These dispensaries should also be in very close relation to the sanatorium, and patients should be referred back to them after discharge, in order that they may be followed up by the visiting nurse to see that they continue to carry out the instructions they may have received and in this way help to insure a greater permanency of benefit. Such a system would help in selecting the cases suitable for sanatorium treatment, and promote the efficiency and usefulness of these institutions considerably, by preventing recurrence after discharge. For, to repeat once more, the acute exacerbations of chronic tuberculosis are only single episodes in the life history of tuberculosis infection of the individual and permanent arrest can only be secured or attained by careful observation and supervision over a much longer period than most patients can be induced to remain at a sanatorium.

Left to itself as an isolated unit without any correlated agencies, the sanatorium sacrifices much of its usefulness in the general campaign against tuberculosis, because it would fail to reach but a small number afflicted. The care of the patient after the sanatorium treatment has come to be a much discussed and serious problem.

Finally, as the tuberculosis problem is so intimately related to all other public health problems, its various agencies should be in rela-

tion with all existing public health agencies in a given community. The tuberculosis dispensary might with advantage be linked up directly with a diagnostic or health center and in this way work hand in hand with child welfare, infant hygiene, life extension, school inspection, housing commission, factory control, sanitation, and all other public health agencies. But all these agencies will fail to attain the maximum degree of efficiency unless they have the hearty interest and co-operation of the practising physician. This question requires fuller consideration.

There are two important reasons why, in connection with tuberculosis work especially, we have hitherto failed to obtain the necessary co-operation of the private physician; one of these is that there has been a lack of instruction and training in tuberculosis at our medical schools and the second reason is that in many instances tuberculosis work, as well as many other social activities, has been initiated by laymen without taking physicians into their confidence.

Taking up the first point—the lack of a proper knowledge of tuberculosis—it is obviously not through any fault of the doctor, if he has but a hazy idea of tuberculosis. This subject has been seriously neglected in our colleges and hospitals. There are few schools that require systematic special instruction in tuberculosis. Furthermore, since the infectious nature of tuberculosis has been established, patients suffering from this disease have been banished from the general hospital, where they could be studied in correlation with other diseases of the chest and where autopsy findings could be compared with the physical signs, X-Ray findings and clinical symptoms. Strong pleas have been made recently in favor of a separate ward or small pavillion in connection with general hospitals, to provide a limited number of tuberculosis patients for teaching purposes.

There is the greatest need for thorough undergraduate instruction in this subject, in order that our coming physicians may understand tuberculosis in its broadest clinical, biological and sociological aspects. It is not sufficient merely to make a physical examination and discover the ultimate rale. What is required is the ability, from the history, clinical symptoms and physical signs, to reconstruct the whole history of the disease in the given individual, in order to decide what were the causes and factors that brought about the evolution of active tuberculosis; then, knowing all these facts, including a knowledge of the financial, domestic, and social condition, to decide what is to be the best way of treating him and what are the prospects of his getting well.

Considering finally the co-operation of the practising physician, it should be emphasized again that no plan of anti-tuberculosis organization that does not include him in its plan and scope can hope to attain the fullest degree of usefulness. It is a very just criticism of many social and philanthropic efforts, initiated by laymen from the highest humanitarian and most unselfish motives that they have not taken the practising doctor into their confidence and made him a partner of their activities. Particularly in the rural districts the family physician exercises a great influence over his patients throughout his community, and could be the first to direct them towards the nearest tuberculosis agency available. He should be made acquainted with the location and scope of such agencies and know the most direct method, by which he can avail himself of their help. He should remain in intimate relation with their operations.

It must be considered, furthermore, that the private practitioner has an inalienable right to earn a livelihood by practising his profession. Neither public nor private efforts at bettering community health should interfere with this privilege, which has been granted him by the State on the basis of certain educational requirements. These represent capital invested. The public agency should not seek to divert his patients, prescribe for, or treat them, unless they actually require such help as he cannot give them. It should sustain the doctor, as far as is consistent with the interests of his patients. The public health agency may help him in confirming a diagnosis that he might be reluctant to make, in view of the still existing feeling and sentiment against tuberculosis as a social stigma. It may also help him by placing at his disposal special knowledge and facilities in the way of laboratory and X-Ray examination, for example. In return, it is only fair that he should extend his aid in the fight against tuberculosis and more especially, by re-

porting suspected or definite cases, help in locating the centres of infection. Operating in this way, his prestige will not suffer, nor will he incur material loss. On the contrary, a greater interest in, and knowledge of, health matters in his community will only increase his influence and scope and be to his own practical advantage, provided he is sufficiently progressive to take advantage of such facilities and wide awake to follow the newer trend and development in the field of medicine. The time may come when we shall adopt the oriental system of paying doctors to prevent disease and when all physicians will be full-time men paid by the community of the state. But, until that time comes, we must enlist the private doctor as an important and valuable ally in our plan of campaign against tuberculosis.

MOUTH-BREATHING.*

By E. E. WATSON, M. D., Salem, Va.
Physician-in-Charge, Mt. Regis Sanatorium.

I will preface my few remarks by saying that I have not attempted to cover the subject of "Mouth-Breathing" in a broad way, and will only discuss briefly a few practical points which have a definite bearing on the diagnosis and treatment of pulmonary and laryngeal tuberculosis.

Of the several functions of the nose, the respiratory is probably first in importance. Before passing to the delicate structures of the deeper respiratory tract, the air is tempered, humidified and filtered, if the nose be functioning properly. There are many causes for interference with this respiratory function, but those which are most frequently met in my practice, which is composed largely of adults, are deviated septa and nasal spurs, hypertrophic rhinitis, and less often adenoids and nasal polypi, the latter being practically always only a symptom of ethmoiditis.

We are all perfectly familiar with the train of symptoms attending Mouth-Breathing. There is always a chronic pharyngitis and laryngitis, and usually the inflammatory changes extend to the trachea and large bronchi. There may be a dry, hacking cough, hoarseness, particularly in the morning; a tired feeling in the larynx or, in winter especially, there may be a severe cough with expectoration, pains in chest, dyspnoea, and general malaise. Not infrequently mouth-breathers expectorate blood-stained sputum on arising or may only have a taste of blood in the mouth. Naturally, such symptoms, when they persist, cause the patient to suspect tuberculosis and he consults his physician. That a definite diagnosis often offers great difficulty is patent, especially where we can obtain a history of exposure to open tuberculosis during childhood.

Hamman in a recent paper before the North Atlantic Tuberculosis Conference, in Richmond, made the statement that no field in medicine presented such difficulties or required greater skill on the part of the phyiscian than the diagnosis of diseases of the lungs. He showed a case with a negative history and in which the physical findings and stereo-X-Ray plates were not sufficiently positive to make a diagnosis of tuberculosis, but the sputum was positive for tubercle bacilli. With this in mind we can readily appreciate how difficult it often is to exclude tuberculosis in mouth-breathers. Often the patient will say that he breathes perfectly through his nose, but will come back a few days later and inform you that some member of his family tells him that he breathes through his mouth while asleep. The similarity of the clinical picture presented in chronic laryngitis of the mouth-breather and that of an early tuberculous larynx, makes the differentiation particularly doubtful, when occurring in a patient with a frank pulmonary tuberculosis.

It is not unusual to have a case of definite open tuberculosis which does not show the improvement that we had hoped for and expected and careful study of this patient reveals the fact that he breathes through his mouth while asleep. Correction of the nasal obstruction may be and often is followed by immediate cessation of cough, expectoration and the other symptoms which have been giving us concern. In a case of long standing, the habit may become so fixed as to take a great deal of patience and persistency on the part of the patient to correct.

In a study of our statistics at Mt. Regis, I find that during the first five years we have diagnosed tuberculous laryngitis in twenty per cent. of the cases. These varied in severity

*Read as part of the symposium on Tuberculosis at the fifty-first annual meeting of the Medical Society of Virginia, in Petersburg, October 26-29, 1920.

from a slight enlargement of the arytenoids or a gray elevation of the interarytenoid fold to horrible ulcerations sometimes extending to the fauces. In the past two years ten per cent. have been diagnosed as tuberculous laryngitis, though the class of cases has averaged about the same. I believe this reduction to be due to the increasing realization of the importance of proper breathing and correction of nasal defects, with a prompt clearing up of the laryngeal symptoms. To say that seventy-five per cent. of our unquestioned tuberculous larynx cases have occurred in mouth-breathers would be no exaggeration. This to me is sufficient evidence to warrant a plea for more careful attention to the nose in our early cases in order that our patients may have lessened the possibility of so serious a complication. Gratifying results are often seen in ulcerated larynx cases by the use of absolute rest to the voice, local applications, reflected sunlight, etc., but the first step should always be to see that the patient does not breathe through the mouth while either awake or asleep.

SUMMARY.

In conclusion let me emphasize the following points:

1. The examination of every chest should begin with the nose.

2. Mouth breathing may cause symptoms simulating pulmonary, as well as early laryngeal tuberculosis.

3. Correction of nasal obstructions is most important in getting the best results in treatment of laryngeal and pulmonary tuberculosis.

4. The diagnosis of chest conditions is the most difficult in medicine and accurate conclusions can be best arrived at by a proper interpretation of a detailed history, by thorough and repeated laboratory examinations, by stereoscopic X-Ray studies and a careful physical examination.

That tuberculosis may be present when we are not able to find it by X-Ray and physical examination cannot be doubted. We can often only make a tentative diagnosis by exclusion and the patient should receive the benefit of the doubt and be given treatment.

In 1918, Trudeau Sanatorium at Saranac Lake, New York, with its staff of eminent specialists in physical diagnosis, X-Ray and laboratory departments, and with a consulting board which meets every week, classified 42 or 16% of admissions as doubtfully tuberculous. Why should we hesitate to say that we don't know? As Dr. Hamman says, and as is done by those sanatoria with which I am familiar, this class of cases should be reported as doubtful and not used to boost the Sanatorium statistics.

I trust that in presenting this subject to this meeting it will cause no one to neglect the proper study of the chest while hunting for the unusual, for, after all, tuberculosis is unquestionably the most frequent cause of chronic cough and the other symptoms above enumerated. I wish, on the contrary, to emphasize the difficulties in diagnosis which the lungs present and to plead for a more painstaking and detailed study of each individual case.

CURBING TUBERCULOSIS.—TWO SUGGESTIONS OF AT LEAST TENTATIVE VALUE.*

By STEPHEN HARNSBERGER, M. D., Catlett, Va.

My part in the World War was culling the unfit from the fit. Eight hundred and fifty registrants came up for inspection in my county of Fauquier. Two hundred and fifty of this number were examined the first four days. Twenty-five were turned down on account of incipient tuberculosis. Two preliminary questions were asked. First: "Have your health and habits in any way interfered with your ability to earn a livelihood?" The first registrant set aside on suspicion of tuberculosis answered "No." To the second question, "Do you consider that you are now sound and well?" he answered "Yes." I then asked him, "On what grounds?" His reply was, "I never took a dose of medicine and was never sick in my life." I told him to take a seat and I would consider his case later. I had mentally set him down as tubercular. In fact, I segregated all or nearly all of them by looking at them. When I had the opportunity, I found this man running a temperature and with the signs elicited after forced expiration, cough and quick inspiration.

An army medical officer, who was present, insisted on my sending all such mild cases to camp. He said I examined too closely—more rigidly than the regular army staff did. I told

* Read as part of the symposium on Tuberculosis, at the fifty-first annual meeting of the Medical Society of Virginia, in Petersburg, October 26-29, 1920.

him that I did not examine them at all; just looked at them and then put them aside until I had time to "check up" my opinion by confirmative evidence. This man in a rather excited manner asked, "Are you turning me down for tuberculosis?" I said, "Yes, but don't let it worry you, for if you do as I tell you, you will soon be well." The third day he came back saying, "I did as you advised me and I feel sure that I am going to get well." He is well and back at work. And all the others, so far as I can learn, are well. Now this should appear in large type, because it carries a valuable lesson. Many of the registrants and a large number of their parents and friends were bitterly opposed to their being forcibly dragged to town and from their business. But it seems to me that the best thing that could possibly have happened to them was to find out so early that they were among the physically unfit. For it was the undoubted means of saving them from a premature death or a lingering state of invalidism, with all the accompanying dread and danger to others.

I believe it is agreed that one open case of tuberculosis infects ten others. Then it is easy to understand what a drain of young manhood in this State alone was rescued from tuberculosis by this compulsory examination of registrants. Ten per cent. of 850 in one county! and we have over one hundred counties and several large cities in the State. Figure it out for yourself. I grant that ten per cent. is not a great showing, but it is assuredly of tenable and tentative value, and should in due time lead to the appointment of a special commission of health workers, physicians and lawyers, to study and report on the question at some future meeting of this Society. It will take time to perfect co-ordination and co-operation but, if intelligently and energetically pushed, it will win in the end; especially if we get the women to lend us their never failing or faltering spirit and interest in the matter. Compulsory education will lead to compulsory examinations and when these two essential factors of success work in unison, under the spur of adequate interest, we will reach a minimum level of increase in the incidence of tuberculosis, and not till then.

Poverty, ignorance and discontent, combine to nullify any method of action inaugurated to prevent this and other communicable diseases. Therefore, it is easy to see that people must work—which means that they must provide and live better, in order to forestall tuberculosis. Compulsory education will help after a time but compulsory examination is the only immediate dependable means by which tuberculosis can be blocked to the safe point of potential danger. Millions have been spent in this country in the past third of a century to check tuberculosis and yet we are just able to record limited progress. In England, where the work has run longer and also at an enormous cost, the benefit has not equaled the persistent effort and the financial outlay. If you will pardon a homely expression, we are still "chewing the bag" but we have not "tasted the pudding." Shall we continue to chew the same bag?

I cannot but think that the economic tragedy of the past must give way to a new era of constructive effort, if we expect to cope with tuberculosis in its prevention. It should be kept in mind that the stability of state governments depends upon the ability of the people to perform essential service. The people must recognize the fact that the public welfare is vitally affected by the potential and actual continuance and spread of tuberculosis. Lectures and circulars have not substantially lowered its incidence, principally because the basis of its progress has not yet been properly and adequately attacked. DISCOVER THE INCIPIENT CASES. See that they are segregated and scientifically cared for and I confidently believe that in a generation or two maximum eradication will be secured. As long as we have poverty and ignorance, through illiteracy, we will have tuberculosis, but that is no excuse for not giving the best, though untried means, a trial. We must not only consider in the cost of tuberculosis the items of professional service, drug, nurse and funeral bills, but which is far more important, *the waste to productive efficiency and prosperity.*

I am fully persuaded that the definite institution of systematic examinations should become a necessary part of state and municipal endeavor. States should take hold on this extension of medical supervision, not as it is today but in its larger sense. We cannot rely upon parents in the effort to further the physical well-being of their children. We have given years to that plan and we can now see that it

is practically of meager and slow benefit. We must change our past and present way of trying to teach children the fundamentals of physical soundness through the parents. The fossilized mind of adult life refuses to acquire and hold the health demonstrations which are every day brought to their ears and before their eyes. They are, though innocently, of those who have ears "but hear not" and have eyes "but see not." Let us begin anew and bring such subjects before the children every day, while they are at school, by two or three minute talks—not long lectures to tire and block their interest and intelligence, but just a fact today, another tomorrow, and so on. It will be quickly evident that they are imbibing knowledge and understanding. They may not at first seem to give attention, but the facts taught will lodge and in a little while they will prompt their parents when they see or hear them go contrary to what they have stored up; and the grasp will grow firmer from month to month and year to year. By the end of the first generation, this child knowledge and interest in public health matters will rapidly advance, and by the second generation, at least, both children and parents will become familiar with the rules to better health; the moral and physical development will be so well promoted, the benefits so clearly fixed in their minds, and interest in such a vital matter so brought to the forefront, that parents will keep the public conscience alive to the importance of the public health as the basis of economic efficiency and the best assurance of permanent personal comfort and happiness.

These two suggestions, I am led to believe, though they may now seem remote in practice, will eventually be regarded and accepted as the final effective effort in the fight against tuberculosis.

Children's brains are plastic, and instantly receptive, their intelligence alert. They will quickly see when their parents err in not following the accepted up-to-date problems of hygienic betterment and the prevention of communicable diseases. The adult brains are, as it were, fixed and the older the age the less responsive to the constructive side of health, care and development. This makes them forgetful and fosters inattention. The earlier in life that health facts are taught, the stronger and more lasting the impression and the greater the certainty that they will find fixed lodgment and commensurate practice.

X-RAY IN PULMONARY TUBERCULOSIS.*

By J. T. McKINNEY, M. D., Roanoke, Va.

The splendid work being done by our Public Health officials, physicians, nurses and laymen in the eradication of the "Great White Plague," and the increasing interest manifested by all in this fight is a source of gratification. In our campaign against the spread of this great menace, we have enlightened the masses to the necessity of improving living conditions and working surroundings, and we are teaching them hygienic measures to prevent its contraction from infected sources. As valuable as these preventive measures are, we still have the problem of caring for those whose health has been undermined by the infection. Their hope of arrestment and probable cure lies in an early diagnosis, and early institution of treatment.

Since physicians everywhere are beginning to depend more and more upon X-Ray findings to aid them in making an early diagnosis, and are learning its still greater value in allowing them to accurately follow the course and progress of the disease, I shall attempt briefly to outline the possibilities of the X-Ray and some of its limitations in pulmonary T. B. But here I wish to state emphatically that no one agent can, or should be absolutely depended upon to make a diagnosis of pulmonary T. B., and that it is only by correlating the physical findings, clinical history, and laboratory findings that we can reach a proper conclusion.

The X-Ray examination of chests is a study of shadows, and increased densities, and the ability to interpret these shadows and densities into pathology, gives us the clearest picture and conception of the changes going on in the living subject that we have at our command. And here a word in regard to laymen or technicians attempting to report on X-Ray findings will be in order. The actual interpretation should always be in the hands of trained physicians.

It is essential that each Roentgenologist

* Read as part of the symposium on Tuberculosis, at the fifty-first annual meeting of the Medical Society of Virginia, in Petersburg, October 26-29, 1920.

adopt a technique and follow it constantly. In this way he soon establishes what to him is a normal lung with normal shadows and densities, thus making the recognition of abnormalities and pathological changes much easier of detection. Personally, I make stereoscopic examinations of all cases, and have all patients, who are able, stand in the erect posture, using a high spark gap and short exposure.

While a standardized technique and good plates are essential, the Roentgenologist must have a thorough knowledge of the anatomy of the lungs, the location of the branches and ramifications of the bronchi, the position of the lobes of the lungs, and the minute cellular structure of the lung tissue. In our daily work we are constantly noting normal variations in the number of the branches of the bronchi given off, the occasional absence of the middle lobe of the right lung, and often the presence of a lingual tit in the left lung corresponding to the middle lobe of the right lung.

One of the frequent questions asked the Roentgenologist is whether early T. B. can be shown by X-Ray examination, and whether we can demonstrate the lesion as soon as or earlier than the clinician. From my own personal experience, we have had extremely few cases that the clinician could make a positive diagnosis of T. B., in which we were unable to note some pathology in the lungs upon X-Ray examination. In following and going over a number of the plates at Catawba Sanatorium, and a number of cases with Dr. Watson, at Mt. Regis Sanatorium, we have checked the Roentgen findings and, as stated above, while the X-Ray readings have been done independently of the physical findings, there have been few incidents where there was a variance.

We have, however, had cases previously examined elsewhere, and a diagnosis of T. B. made, which, with negative X-Ray findings, and atypical findings, were later found to have infected tonsils or teeth, the absorption of toxic material giving them the clinical picture of tuberculosis. Removal of the tonsils, or source of infection has resulted in a cure. And while we must ever be on the alert to make an early diagnosis of a pulmonary lesion, yet not every case with the clinical picture of an early tuberculous subject has the disease. As noted above, absorption of toxic material, hyperthyroidism, and many other causes should be looked for. In this class of cases the X-Ray is of inestimable value in helping clear up the diagnosis.

The question of activity and non-activity is one of paramount importance and, while the Roentgenologist, just as the clinician, from physical findings alone, is unable to tell if activity is present, we are able to tell if a patient has clinical tuberculosis; by this we mean if there is sufficient involvement of the lung structure to give symptoms from time to time, for where complete fibrosis or calcification has not taken place, acute exacerbations of the old infection will flare up at intervals. This classification of tuberculous patients, clinical and non-clinical tuberculosis, a classification suggested by Dr. Allison, head of the section on Roentgenology at the University of Minnesota, at the recent meeting of the American Roentgen Ray Society, appears to me to be the simplest and best classification yet suggested.

The peculiar mottling of tuberculosis, invading as it does the parenchyma of the lungs, is more or less characteristic, though other conditions may give a somewhat similar picture. Some cases of anthracosis and pneumonokoniosis, as shown by Dr. Jarvis occurring in the granite workers of Vermont, and cases of lung syphilis, reported by Dr. Watkins of Arizona are, from the Roentgen findings, practically impossible to differentiate from T. B. Metastatic malignancy of the lungs, pulmonary changes due to heart lesions, and the post-Flu, and infiltrations in and around the bronchi seen in soldiers who have been gassed, must all be considered by the Roentgenologist before making a diagnosis. While peribronchial thickening is often noted, with calcified glands and an increase in the hilum shadows present, unless we can see increased haziness or density and areas of tuberculous infiltration, or mottling out in the parenchyma of the lung, a Roentgen diagnosis of T. B. is not made.

The entire stages of tuberculosis can be shown by the X-Ray, exudation, infiltration, fibrosis, caseation, cavitation, calcification, accumulation of fluid, distortions of the thoracic viscera by pleural adhesions, and thickening of the pleura, though some instances of a thickened pleura cannot be detected, the interlobar pleurisis showing up best. The snowy

appearance, or cotton ball areas, of tuberculous mottling, with slight haziness and cloudiness surrounding these areas, upon improvement of the patient may be seen to clear up, leaving string-like shadows and, ultimately, a disappearance of the cottony effect and formation of scar tissue or calcification. The linear fans described by Dunham are often seen, and to Dunham more than anyone else we are indebted in a large measure for our present knowledge of X-Ray in pulmonary tuberculosis.

The fluoroscope and stereoscopic roentgenograms are of much value in artificial pneumothorax, showing the clinician first the condition of the non-compressed lung, the presence or absence of pleural adhesions, and the approximate amount of compression obtained.

Conclusions.

1. The X-Ray findings must be correlated with the clinical history, laboratory and physical findings.

2. A standard technique should be adopted by each Roentgenologist.

3. A thorough knowledge of the anatomy of the lungs and the various shadows cast by the pulmonary structures must be known by the roentgenologist.

4. In practically all cases, pulmonary tuberculosis can be shown by the X-Ray as early as diagnosed by physical findings, though the two must be considered together with the clinical history.

5. While activity of a given small area cannot be told, yet the presence of clinical tuberculosis can be told.

6. The pulmonary changes in T. B. give a more or less characteristic appearance in the roentgenogram.

7. The different processes of tuberculosis can be demonstrated in all their stages by the X-Ray.

8. The limitations, then, to a proper diagnosis depend, to a large extent, upon the experience of the Roentgenologist and his ability to properly interpret the shadows and densities seen on the roentgenograms.

519 *MacBain Building.*

Interpretation of Signs and Symptoms In Pulmonary Tuberculosis.*

By H. G. CARTER, M. D., Burkeville, Va.
Superintendent of Piedmont Sanatorium.

Over-zealous specialists and untrained young practitioners have in the past three years gone too far attempting to make an early diagnosis of tuberculosis. France and Canada lost thousands of men to the colors because of errors in the diagnosis of Pulmonary Tuberculosis, and this fact was heralded to the world. The same condition existed for a period in this country and the immediate result on the part of all was a tendency to refrain from making a diagnosis of Pulmonary Tuberculosis unless same could be definitely proven. This is as it should be, provided we proceed to prove or disprove in a thorough manner. Remembering for instance the existence of a 4-plus Wassermann does not necessarily explain a pathological lesion in the chest: tuberculosis and syphilis can, and often do exist in the same individual.

One is struck with the wild scramble, most marked at meetings of medical men doing tuberculosis work exclusively, to make some other diagnosis than tuberculosis—syphilis of the lungs, mycotic infections, circulatory disturbances simulating tuberculosis, foreign bodies, Graves's disease, and various other conditions. The negative side is given and the positive side is left with "Nothing but Tuberculosis." At the thirteenth annual meeting of the Southern Medical Association, Witt, in the closing discussion on his paper "Conditions That Simulate Tuberculosis," confessed: "That in his opinion 100% of cases of tuberculosis are treated for something other than tuberculosis when they first present symptoms."[1] On account of the wide prevalence of tuberculosis and the comparative rarity of some of the other lung conditions, we like to pat ourselves on the back when we find the unusual and pass it on to our contemporaries. This goes to make up a greater percentage of literature on "Other Conditions." Comparatively little is said about the diagnosis of tuberculosis. Occasionally we do see an article devoted to some fine point in diagnosis which can be of no value to the general practitioners doing 90% of the work. Muscle tone of Pottenger, corde musculaire of Halbron and

* Read by title before the fifty-first annual meeting of the Medical Society of Virginia, in Petersburg, October 26-29, 1920.

Levy, and variation of blood pressure in lying and standing are all interesting, provided one has hours to spend on each patient; but even then they are of doubtful value. The narrowing of the isthmus of Kronig and limitation of motion at bases are, to say the least, superfluous in the majority of patients presenting themselves for diagnosis. The tuberculosis problem would be vastly improved if the general profession paid less attention to articles devoted to the "superskill" of some "highly trained" specialist and more attention to the well-known signs and symptoms and the correct interpretation of these signs and symptoms.

In making a diagnosis of early tuberculosis a thorough knowledge of a normal chest is paramount; a knowledge of abnormal signs and "horse sense" in interpreting these signs in conjunction with a line of symptoms is essential.

It is not sufficient to say, "There is a spot on the lungs." Is there an active lesion present and if possible, what is the character of this lesion? For instance, dullness on percussion means a lack of resilience in the lung substance; and even if proven to be due to tuberculosis this may be any of three conditions, viz., the infiltration of early tuberculosis, the fibrous scar of latent tuberculosis, or the fibrous deposit of chronic tuberculosis.

Whispered voice and bronchial breathing indicate that some abnormal condition is present which allows conduction of sound to the periphery of the lung from the bronchioles or from small deeply seated cavities. Bronchial and cavernous breathing, more marked examples of the same type, indicate conduction from a larger tube or cavity. But any condition that renders the lung substance more conductive to sound gives whispered voice and bronchial breathing, viz., as noted above. In feeble breathing the reverse is true, i. e., either that portion of the lung is functioning abnormally or there is some non-conducting substance between lung and instrument.

The majority of the other types of abnormal breathing are capable of wide interpretation. Granular breathing, more or less common, is supposed by some writers to be the earliest manifestation of tuberculosis due to roughening of lung tissue in the alveoli. The moist rale after cough is due to the secretion of some fluid or semi-fluid as the result of irritation or inflammation in alveoli, bronchioles, or bronchi. The size and character of rales depend on the viscidity of the fluid, the space the fluid occupies, and the distance of this area from the lung periphery.

It should be borne in mind that all these signs are due to pathology of the lung and that none are pathognomonic of tuberculosis. With slight modifications all these signs can be laid at the door of any pathological condition of the lungs. That pathology above a certain point should be considered tuberculous until disproven, and below a certain point non-tuberculous until disproven, is a good working basis, provided we conscientiously proceed to disprove this assumption. I have been disappointed several times recently by finding tubercle bacilli in clearly defined basal lesions.

That we should not wait to make a diagnosis of tuberculosis until the appearance of tubercle bacilli in the sputum is no longer even debatable. McRae and Funk, in a paper read before the American Medical Association in June, 1919, stated "That the diagnosis of advanced pulmonary tuberculosis should not be made unless tubercle bacilli were found in the sputum on at least two examinations."[2] There were at that time three patients in far advanced stages of lung disease in our sanatorium showing negative sputum and one showing a positive Wassermann. We were fortunate in getting two for autopsy.

Dr. Hopkins of Richmond reports on these cases as follows:

Case No. 386 shows small solid masses of caseous tuberculous tissue with numerous miliary tubercles scattered in other parts of the lungs.

Case No. 321 shows a few small masses of caseous tuberculosis and very numerous miliary tubercles throughout the other parts of the lungs.

The ultimate conclusion in these cases was reached by microscopic examination of the diseased tissues, a test unfortunately not obtainable until too late to be of use in diagnosis or treatment. The number reported on here is small but large enough to make any practitioner careful in labelling a far-advanced supposedly tuberculous case non-tuberculous because of negative sputum.

If no possible physical sign is pathognomo-

nic and if we are not to depend on tubercle bacilli in sputum, what constitutes a diagnosis of tuberculosis? A correct interpretation of a line of symptoms in conjunction with physical signs denoting pathology.

Pottenger classifies symptoms in three groups: first, those due to toxemia-malaise, lack of endurance, loss of strength, nervous instability, digestive disturbance, loss of weight, night sweats, rapid pulse and daily increase in temperature; second, those due to reflex causes, hoarseness, cough, chest pain and flushing of the face; third, those due to the tuberculous process *per se*—frequent colds, hemoptysis, pleurisy and sputum. He calls attention to the fact that group 1 is not pathognomonic of tuberculous toxemia and may be produced by any toxemia, but that when symptoms of toxemia are present, if they are due to active pulmonary tuberculosis, there will always be present symptoms of the reflex group or symptoms due to the tuberculous process *per se*. It is upon this combination that we rely. The reflex group is of importance only when taken in combination with group 1 or group 3. The symptoms of group 3—tuberculous bronchitis, hemorrhage, pleurisy and sputum—are fairly definite in determining the presence of tuberculosis but are usually associated with group 1 or group 2.[3]

Any group of physical signs signifying pathology of the lungs when considered with these symptoms as outlined by Pottenger warrants a diagnosis of active, pulmonary tuberculosis; on the other hand, with the most definite signs and without symptoms, a diagnosis of active disease cannot be made except by prolonged observation. L. Brown draws a distinction between clinically active disease as evidenced by symptoms and pathologically active disease as evidenced by the progression or retroprogression of physical signs.[4] That the disease can be pathologically active and clinically inactive should be borne in mind. Such cases occur in all tuberculosis sanatoria. But signs and symptoms must be considered together to arrive at exact conclusions.

To be concrete:

Given a case with altered breath sounds, pectoriloquy and dullness over an area of four fingers' breadth at an apex with no other apparent explanation, we assume that we are dealing with a tuberculous lesion and one of two conditions is present; first, an old healed scar with lung tissue replaced by fibrous tissue, or second, an active lesion in the stage of infiltration. Symptoms must be the deciding factor and symptoms of toxemia with cough, hemoptysis, prolonged pleurisy or bronchitis, make the diagnosis certain. Reflex symptoms associated with toxemia, minus group 3, are fairly definite. Reflex symptoms with cough, hemoptysis, or pleurisy render a diagnosis of active disease unless the reverse is proven. On the other hand, given a case with definite physical signs with no symptoms, and prolonged observation is necessary to make a diagnosis of a pathologically active disease. Even the moist rale after cough may not mean clinically active disease. All such cases, however, should be under observation.

Conclusion.

1. Tuberculosis is the most common explanation for lung pathology of a chronic nature.

2. While it is most commendable to find explanations other than tuberculosis for pathology of the lung, it should be borne in mind that such conditions are more or less rare.

3. A diagnosis can be made only by interpreting physical signs in the light of symptoms.

Bibliography.

(1) Southern Medical Journal. V. 13, No. 3.
(2) Journal A. M. A. June 1919.
(3) Pottenger, "Tuberculosis".
(4) American Review of Tuberculosis. V, IV.

THE LOCAL TUBERCULOSIS CLINIC.*

By CHARLES R. GRANDY, M. D., Norfolk, Va.

At this time of the year when an opportunity for raising funds for tuberculosis work is presented by the Xmas Seal Sale, our people stand face to face with the question of whether they should hold such a sale, and also how this money should be best expended after it has been obtained.

Our death records and the clinics, which the State Tuberculosis Association has been holding in many localities, show that much work and money can be advantageously expended all over the State, but the best method of conducting the fight still must be determined, and indeed should be determined before the Seal Sale is started, as the people will most properly want to know how the money they are asked to give will be expended.

* Read by title as part of the symposium on Tuberculosis at the fifty-first annual meeting of the Medical Society of Virginia, in Petersburg, October 26-29, 1920.

The money has been frequently turned in to the State Association, but the question has arisen, would it not be wiser to use a large portion of this money in the localities in which it is raised?

If the sum is small, it probably can be used best to pay the way of needy cases to a sanatorium, it costing something near $150.00 to send a case to Catawba, a smaller amount to Piedmont, and larger to Blue Ridge Sanatorium.

If the amount raised is considerably larger, a tuberculosis nurse can be gotten, or a smaller amount can be used to pay part of the salary of a Public Health nurse for looking after the tuberculosis cases in the community, which is probably the better plan in the smaller places. But, in a community of from fifteen to twenty thousand, or perhaps even of ten thousand, these two means of fighting tuberculosis will be found very incomplete though very necessary parts of the campaign, and a co-ordination and directing institution must be set up. Such an institution can be best maintained in a properly run tuberculosis dispensary, where patients can receive treatment and education, but which must have visiting nurses to find and keep in touch with the patients. Such a dispensary also furnishes the best method of picking out the proper cases to be sent to the Sanatoria, and also a means of looking out for them when they return.

Though other states have established such dispensaries very generally, Virginia has not yet fallen well into line, and it is apparently for that reason that I have been asked to discuss the Local Tuberculosis Clinic or Dispensary, one of which I have been conducting for the last fourteen years.

The first thing that would be asked is, does such a dispensary really pay? Is it of real service to the patients, to the community, and to the doctors?

To the first question I would answer that the Norfolk Clinic averages seventeen patients a day for four days in the week, through the year; that many moderately advanced, and some far advanced cases have been gotten back to work; that these old patients return to us and bring their relatives and friends if anything goes wrong with them; that many cases are being examined for the sanatoria, and frequently financially aided in getting there; that far advanced cases get nurses' service at home as well as medical advice, medicine, and sometimes food. I think you will agree that this is real service to the indigent consumptives.

Is such a dispensary of service to the community from a Public Health standpoint? This is a more difficult question to answer, and I can merely say that the dispensary is the center of the tuberculosis work in Norfolk, and that this work in turn is merely a part of the general health work, and that it is impossible to say what per cent of the improvement is due to it. But, our tuberculosis death rate has dropped from 290 in 1909, to 113 in 1919, and I feel that the tuberculosis dispensary has done its part, for not only can we point to these lives saved, but the patients and their friends are given printed and verbal instructions, and the children in these families are brought to the dispensary and examined and many infected cases are thus found, while others are kept from developing into active cases. These children are kept under observation, and in various ways improve in health. Other delicate children from the schools are examined, and all are protected from further infection, and their home conditions improved.

It is a service to the doctors in general, in that it takes care of a number of cases who are not in financial condition to pay fees, for this dispensary is not for the well-to-do, whom we instruct to go back to their own physicians. While it is not directly of financial benefit to the doctors who work there, for none of us gets a salary, I feel that we have been well repaid by the experience we have gotten, by prestige which brings pay cases to our offices, and by the opportunity presented by such a dispensary of giving real tangible service to one's state, in a way which is not too exacting.

Various questions are asked in regard to the establishment of a tuberculosis dispensary, and the first is usually, what are the prime necessities in starting such a dispensary? A conscientious doctor, and an enthusiastic tactful nurse must be obtained before anything else is done. It is impossible to say which of the two is the more important, as they must work hand-in-hand. The nurse more often gets the case to the dispensary, but unless the doctor handles

the patient properly and personally, as a sick man and not merely as a case of T. B., the patient will not long continue to come in for treatment, and the nurse will be unable to get him to follow instructions. It is likewise entirely impossible to properly handle tuberculosis cases without a nurse to visit and supervise their treatment. Having a doctor and a nurse, a dispensary can be started in two rooms with very limited equipment, which, however, must include proper record sheets or cards, and a pair of scales. We have found it advisable to furnish a certain amount of medicine, which is especially attractive to the colored patients.

Why not see the tuberculosis patients along with other medical patients? I can only answer that it does not work, as the tuberculosis patients are made to feel that they are unwelcome by the other patients, and one class or the other soon stops coming.

Will patients continue to come to a tuberculosis dispensary over long periods? We have very little trouble in this regard, though the cases must often be followed up by our nurses if they stop coming for some little while. Indeed, we often have trouble in the opposite way, as our patients will bring in friends to be treated for all sorts of complaints, from the tops of their heads to the soles of their feet. We make it a rule to examine all chest and febrile cases, and then refer to other places those cases which are definitely not tubercular. We may have to examine some of these cases a number of times before discharging them. Patients are expecteed to report on the same day of each week, and thus get to knowing each other and compare notes. It is a good plan to have good reading matter, such as *The Journal of Outdoor Life*, for them to read while waiting for the doctor to see them. We have found it advisable to have the white and colored patients on different days.

Should the dispensary be run by the Health Department, or by the Tuberculosis Society? This work is distinctly a part of the Health program of the community and, as such, should come under the Health Department, provided the Health Department can and will furnish the conscientious doctor, and the enthusiastic, tactful nurse, which are absolutely necessary. Until the Health Department is ready to do this, it may be advisable for the Tuberculosis Society to run the dispensary, as is the case in Norfolk, though we co-operate in the closest way with the Health Department, and are always willing and anxious to turn over the work; but the Norfolk Health Department so far prefers to let the work remain under the Tuberculosis Society.

Another important function of a tuberculosis dispensary is to keep in touch with cases which have come home from the sanatoria. Such cases are reported back by the sanatoria to the Health Departments and are visited by the nurses to see how they are getting along. After some time letters are sent out by the sanatoria to see how thesee ex-patients are progressing. To answer this, as well as to keep informed in regard to these patients, chest examinations should be made at stated intervals, and here once more the dispensary must be called on, though it must again co-operate with, rather than supersede the private physician. This function is most important, for these patients, returned at best as "quiescent," can be supervised, given advice as to work they can do, and if a "flare-up" should occur they can again be put on treatment, or perhaps gotten back to the sanatorium for a month or two. Such supervision saves may cases which might otherwise become incurable and finally go to their graves.

Such in brief are the functions of a city tuberculosis clinic or dispensary which, let me re-iterate, should be run only for those patients which are not financially able to pay for medical services. These patients, I am sorry to say, are many, for there is no disease that pauperizes so often as chronic, long-drawn-out consumption, which treatment calls for giving up work, along with an increased diet, two things that ordinarily do not go well together. Such patients are a terrible strain on the private doctor, for we all have learned from sad experience that the charity case is often the most exacting. Here the dispensary steps in and is ready to relieve the private doctor, and give the patient free treatment and nurses' service. It also relieves the patient from the embarrassment of calling on a doctor when there is no money ready to pay the fee. It should, therefore, always co-operate with the whole medical profession, and be ready not only to relieve them of these unprofitable cases, but also to

give them free consultations in those cases who though still able to pay small fees, are not able to pay for consultations.

A tuberculosis dispensary, let me repeat, cannot be of full value without the backing of the medical profession, who in time must consider it rather as an assistant than as a competitor, and as such be ready to lend a helping hand when occasion should arise.

Discussion of Tuberculosis Symposium.

Dr. Fred M. Hodges, Richmond:—Referring to Dr. McKinney's paper, I would like to call attention to two or three points in the X-ray findings of tuberculosis. We study pulmonary tuberculosis principally from the appearance of the hilus, the bronchial tree, and the parenchyma of the lung. On the plate, we can show up the heavy shadows around the hilus of the lung, but further than that, it is impossible at times to go.

In some instances, malignancy, syphilis, acute infection, etc., will give almost the same appearance as tuberculosis. If there are a good many calcified glands around the hilus, it is more apt to be tuberculosis. A study of the bronchial tree enables us to call the attention of the clinician to abnormalities; but we know that many changes due to acute infections may closely resemble tuberculosis, and that it is dangerous to diagnose these conditions positively from an X-ray plate.

This disease can of course involve the larynx and larger bronchi, without giving any evidence on the X-ray plate. The cases of hilus and peribronchial tuberculosis of clinical importance are largely in the minority; therefore, our chief attention is always directed toward the finding or elimination of actual pathology in the parenchyma of the lung. If the sputum is negative and physical examination shows nothing definite, and at the same time good X-ray plates show no pathology in the parenchyma of the lung, the case is not apt to be one of clinical tuberculosis.

If, on the other hand, there is any evidence of local trouble in the lungs, and the X-ray plates show pathology out in the parenchyma, we are nearly always dealing with a type of tuberculosis which is going to demand active treatment for any permanent benefit.

Dr. P. D. Lipscomb, Richmond:—Needs of dispensaries and scarcity of them. If I were to attempt to condense into one word one of the chief leading features of the dispensary, I would say that it is education. Very few people are well informed on the subject of tuberculosis, have any idea of the danger of infection, or how easily people may become infected, and they should know of the precautions necessary to prevent infection. Most dispensary patients never heard that tuberculosis is preventable and curable. The dispensary has a great work to do in the community. It is a work that is not being done by any other aggregation of individuals, so far as we know. Most dispensary patients are poor chronics and chronically poor; are interesting to physicians and, therefore, do not appeal to the average physician. Just this class of patients is taken charge of by the dispensary and by the visiting nurses who are usually associated with this sort of work. One of the chief objects of the dispensary is finding the adult tuberculous. If we can prevent tuberculosis in children, we are cutting off the disease at its source. It is very necessary to get the parents in order to find the children. The dispensary stands for a definitely organized, well defined enterprise for reaching this class of people who are just as capable of infecting you and me, and our families, as any other class of people are. Because a man is poor does not prevent his infecting others. A few of the tuberculous patients are in sanatoria; a good many are seen by private physicians, but the great mass of tuberculous individuals who are not reached by any physician, organization or influence to improve their condition constitutes the average dispensary patient.

We must not overlook one other factor of the dispensary in the educational value of the dispensary. We must remember that our physicians are to be educated in tuberculosis, and the dispensary affords opportunity for training men to get out and do this work in the city and in the country. Dr. Hatfield, at the recent meeting of the North Atlantic Tuberculosis Conference in Richmond, referred to the fact that a survey would soon be made of the medical schools in the United States that had connected with them adequate facilities for teaching their students tuberculosis. A tuberculosis disepensary and sanatorium adjacent to the medical school constitute an indispensable asset in teaching men who are going out to do tuberculosis work in the country. The place of the dispensary is primarily educational, and this fact alone justifies its existence.

Dr. R. K. Flannagan, Richmond:—If the physicians when they get together to deal with their own problems would discuss the larger purposes of the profession in relationship to the community too, public health matters and many other needs of the community would also be served. We are perfectly satisfied that everybody knows what the medical profession stands for. For goodness sake, lets stop bickering among ourselves. Wherever I go over the State I find good doctors knocking other good doctors. The little differences between doctors are so insignificant as compared to the great purpose served by the physician in the community, they have no busineses to magnify these differences. I think if we will just get together and talk not alone about professional matters, but about some of the common interests of the community which are directly related to our work, there is no question but that all of the great purposes which we have stood for from time immemorial would get a boost that no other single plan of action could give it.

Dr. W. C. Klotz, Charlottesville:—I wish to point out to those who perhaps do not know it, that Virginia has the distinction of having one of the few medical schools that provides for a real course of teaching tuberculosis. This has been brought about by the University of Virginia and the State Board of Health in connection with the new sanatorium at Charlottesville. The dispensary program which I have outlined and which may seem expensive would cost about 20 cents per head, or $1.00 per year per family, counting five to a family, and is, therefore, not only practicable, but economically sound.

Dr. E. E. Watson, Salem:—The question of early diagnosis of tuberculosis is most important. Not every case of tuberculosis has an early stage; the majority have, however. We may see a patient today and with a most careful examination find no active tuberculosis. Two weeks afterwards there may be a rupture of a tuberculous bronchial gland, and before three weeks have passed the lesion is in the advanced stage, perhaps involving one entire lung. Every case of tuberculosis has not an early stage, and I think sometimes we criticize ourselves and others for failing to make an early diagnosis, when it is no fault of ours.

The biggest question in regard to the X-ray is that of interpretation. Cases which are supposed to have advanced tuberculosis and are so diagnosed by one good X-ray man, may be turned over to Dr. McKinney or some one else, a few days later, and he may report a negative plate.

INCONSTANT BLOOD PRESSURE.*

By GARNETT NELSON, M. A., M. D., Richmond, Va.

The title of this paper has been changed from Fluctuating Blood Pressure to Inconstant Blood Pressure in an effort to find some one word that more adequately suggests its contents. At the outset, we must have a definition of "inconstant" as used herein. I am using it here to cover only those pressures that vary from high to low, or *vice versa*, or first one way and then the other in a space of time not greater than twenty-four hours, either instantaneously or in a few seconds, minutes or hours, and not by any means to include those abnormal pressures which reach their abnormalities more gradually.

Any attempt to discuss pressures from any angle entails a brief consideration of their physiology, and certain features of the circulation.

In order to comprehend pressures at all clearly, we must reduce our considerations to as simple a basis as possible, and liken the factors involved to the fundamental principles of hydraulics. These factors are: A pump, a certain fluid to be pumped, channels through which the fluid must flow, and the resistance offered to its passage by these channels.

Provided its valves are intact, the pump, that is the heart, plays a part as a factor in direct proportion to its energy. This energy or working power depends on the force of each successive beat together with the number of beats in any given time. In considering the heart's relation to high or low pressures, both most be given their share of attention, that is the force of each beat and the number of beats per minute, for it is apparent that a heart beating with a certain force fifty times a minute will not employ the energy or driving power of a heart beating seventy or eighty times a minute with the same force.

The fluid medium driven by the heart's action remains fairly constantly of the same volume, consistency, specific gravity and viscosity, at least to this extent; its viscosity, etc. are not subject to wide variations in a short period of time. The volume may, of course, change suddenly, as in severe hemorrhage or shock, in which latter condition all the blood may be in the splanchnic area. In a discussion of inconstant pressures we may therefore reject all considerations of blood as a factor except in these two conditions, in as much as the pressure variations or abnormalities due directly to other abnormalities of the blood, such as those occurring in anemias, primary or secondary, diabetes or blood retentions, as in nephritis, bring about their effects on pressure gradually and maintain them days, weeks, or months at a time, and lose these effects quite as gradually as they brought them about. The preceding paragraph relates to the consistency, viscosity and specific gravity of the blood only, and has nothing to do with the effect of toxins, internal secretions or gases borne by the blood stream. Any one or more of these may, of course, bring about pressure changes sufficiently suddenly for the word inconstant to be applicable.

The channels through which this stream must pass are: the arteries, arterioles, and capillaries, the influence of veins upon pressure being, as a rule, negligible. It is commonly taught that vascular conditions more than heart action regulate pressure. This is possibly true, but not to be emphasized so strongly in our minds as to make us underestimate the importance of the force and frequency of the heart's action. For example, given a heart beating with a fixed dynamic energy of each beat working against a fixed vascular resistance, the pressure must vary in direct proportion to the number of heart beats, rising as they increase in frequency, and falling as they decrease.

At least so far as sudden changes are concerned, the energy of heart action and the

* Read at the fifty-first annual meeting of the Medical Society of Virginia, in Petersburg, October 26-29, 1920.

resistance in the vascular system are absolutely under the control of certain portions of the nervous system, the vagus, the sympathetic nervous system and the vasomotor nerves. There is one notable exception to this rule, namely, sudden drops in pressure due to acute dilatation of the heart muscle. If sufficiently severe, all compensatory effort on the part of the vasomotor nerves to overcome the drop in pressure due to dilatation will prove futile, and stasis of the circulation is inevitable.

Although a discussion of inconstant pressure may thus be reduced to a consideration of these two factors, heart energy and vascular tone, nevertheless certain conditions that predispose to sudden changes in pressure must be mentioned, even if briefly. These are particularly: first, arteriosclerosis; second, certain toxic conditions; third, essential hypertensions; and fourth, individual idiosyncrasies, such as, a tendency to unaccountable fainting spells, emotional crises, or other evidences of vasomotor instabilty, as blushing easily, and sensations of heat in one part of the body and cold in another.

These predisposing conditions must be mentioned for two reasons: first, because, when they have been previously recognized, sudden changes in pressure may be of diagnostic significance to the existence of one or more of these conditions. For example in arteriosclerosis involving the smaller arterioles only, the sclerosis of the cerebral arterioles may cause sudden changes in pressure in either of two ways, either by spasmodic contraction with cerebral anemia, or by sudden dilatation, transudates or true hemorrhage bringing about an increase in intracranial pressure with the usual accompanying rise in the systemic circulation.

Inconstant pressures may be divided into physiological and pathological. The physiological variations relate chiefly to: first, the time of day; second, digestion; third, altitude; fourth, mental status; fifth, respiratory variations; sixth, muscular exertion.

The Daily Variations: Records taken at frequent intervals throughout twenty-four hours show variation from the average level so striking that they can not be easily explained, the difference between morning and evening pressure being 15 or 20 mm. or more. Janeway has stated that this variation may reach 60 mm. During sleep at night the pressure is normally lowest during the early hours and rises conspicuously towards morning.

Digestion: The effect of digestion upon pressure can not be positively stated at this time, for the reason that though practically all observers report changes in pressure, some report a fall in the majority of their observations, and others a rise. However, practically all agree that the ingestion of large volumes of food, either solid or liquid, may be expected to cause a marked and even dangerous rise in pressure, especially in those in whom preexisting hypertension is known to exist, and to be a predisposing cause of sudden variation. It is a matter of frequent observation that the terminal stages of the career of a well known hypertensive patient bear a definite relation to the ingestion of a heavy meal. This fact is so well established and of so much significance that, although it will be mentioned again in this paper under the head of "Management", it is not a vain repetition to state here the following inviolable rule: "No individual with abnormally high pressure should ever eat a heavy meal for fear of a sudden and possibly fatal rise in pressure."

Altitude: The effect of altitude on the healthy and diseased is not the same. This fact is of some diagnostic significance. In the tubercular the effect of altitude is exactly the opposite to the effect upon those otherwise healthy, there being a marked tendency to a rising pressure when tubercular individuals ascend from a low to a high altitude. We know that tuberculosis is essentially a low pressure condition. With healthy individuals the pressure should fall in going from a low to a high altitude. If, therefore, an individual suspected of pulmonary tuberculosis and running a low pressure shows a tendency for his pressure to rise in passing from a low to a high altitude, this fact becomes one more link in our chain of evidence.

Mental Status: Certain mental attitudes, such as excitement, usually cause a rise in pressure. This is so common that a correct reading of an individual's pressure can not be made until unusual excitement due to the examination or other causes has been taken into consideration. The relation here is twofold for the reason that excitement causes hypertension and hypertensive cases are easily

excited, especially those who have already been told that they have high blood pressure. The room for error in these cases is of more than trifling moment.

We can never take a single reading of the pressure of an excitable individual and draw any conclusions of any real clinical value. This is true to a great extent of all single readings, but especially so in the excitable individual. On the contrary, mental states such as fear or shock, due, for example, to hearing of bad news, or witnessing the shedding of blood, may cause a sudden fall in pressure, with or without an accompanying disturbance of the heart's action of sufficient magnitude to cause syncope. This fact is habitually borne in mind by surgeons of sound judgment in preparing patients for operation, care being taken to reassure their patients as much as possible and diminish their fears of the anesthetic or the operation itself.

Respiratory Variations: Normally during respiration the pressure rises in the inspiratory phase, especially if a deep breath be taken and the breath held, and falls during expiration. In Cheyne-Stokes respiration, pressure variations are of diagnostic significance. If there is increased intracranial tension, the pressure is low during the period of apnea and high during that of dyspnea, the rise in pressure beginning just before respiration begins and falling just after summit of respiratory activity. Whereas in Cheyne-Stokes respiration without intracranial high tension the converse is true.

Muscular Exertion: It is a physiological fact that muscular exertion, such as running up a flight of stairs, causes both a rise in pressure and an acceleration of the pulse. This rise in pressure is a normal reaction, although sudden and sharp, and not entirely dependent on the pulse acceleration, as proven by the fact that they are not exactly coincident, and that the pressure's return to normal is independent of that of the pulse. This fact is the basis of Graupner's test for myocardial degeneration, which was used extensively in the army. In true myocardial degenerations, unless of too pronounced a degree, there may be an initial rise, but it is not sustained and the return towards the pressure before exercise may carry on to a level lower than before the experiment was undertaken. Pressure findings exactly opposite to the above are to be expected in the so-called "Soldier's Heart" of DaCosta in the Civil War, or "Effort Syndrome" of Lewis and numerous other writers in the late war. Here, besides various nervous phenomena (exhaustion, insomnia, headache, mental depression and irritability), tachycardia, dyspnea, palpitation, and precordial pain, we observed an arterial hypertension unduly exaggerated in response to emotion, posture, or muscular exertion.

In addition to the above mentioned physiological conditions, there is a group whose variations can for the present be only explained as "Individual Idiosyncrasies." In these individuals there is no such thing as a constant pressure. Sudden variations one way or the other occur frequently and independently of any known causative factor. It is probable, however, that some vasomotor instability, vagotonia, or sympathicitonia exists and, though for the present otherwise unrecognizable, is responsible for these pressure instabilities.

Pathological inconstant pressures fall naturally into two heads: 1, Sudden rises, and 2, Sudden falls.

Sudden rises in the pressure in the general systemic circulation that are of pathological significance are seen chiefly accompanying and bearing a definite relation to rises in intracranial pressures, and in certain toxic conditions: also during the administration of certain drugs for diagnostic purposes or for treatment. For brevity's sake, certain selected conditions only will be mentioned for illustration. It is a well-known fact that a rise in intracranial pressure, whether due to apoplexy or some other cause, is accompanied by a rise in the general pressure. The converse is equally true and of far more clinical importance. If, for example, we have already existing hypertensions of perhaps 200 mm., the cerebral arteries will remain intact under this pressure perhaps indefinitely, but will perhaps not stand a rise of 20 or 30 mm. more. If, therefore, we observe in such a case a sudden rise of 20 or 30 mm., due to any cause whatsoever, it is proper to anticipate an impending apoplexy and undertake any means at our disposal to bring about an immediate reduction to the previous level.

As an illustration of sudden rise in toxic conditions, that occurring in the toxemia of pregnancy may be mentioned. For, although,

toxemias of pregnancy of sufficient severity to cause true eclampsia or even to be fatal may occur, with no rise in pressure, this is not the rule. As a rule the pressure rises before any serious eclamptic symptoms develop. A case may be cited: Mrs. H., white, female, age 26, two weeks before term wakes up one morning with a slight headache and sends for her obstetrician, who, on taking her pressure, finds systolic 140, diastolic 85, no previous reading having been higher than 135 and 75. An hour later the readings are 155 and 90; two hours later 180 and 110. The urine is practically normal, showing only trace of albumen. Based entirely on the rapidly rising pressure, the diagnosis of impending eclampsia is made and the patient removed to the hospital. Although all possible haste in preparation and transportation was made, there were two convulsions before the patient reached the hospital. In this particular case, with rather trifling subjective symptoms and a practically negative urine, the sudden rise in pressure was pathognomonic of impending eclampsia.

As an illustration of sudden rises in pressure from drugs, Goetsch's test for hyperthyroidism may be selected. In doubtful but positive cases, this reaction is of diagnostic significance. It consists of the hypodermic adminstration of 1 c.c. of 1-1000 solution of adrenalin; if positive the pressure rises from 10 to 30 mm. in from 3 to 5 minutes, and remains at approximately this level for from one-half to one hour, returning gradually to its previous level.

For examples of sudden falls in pressure, the falls accompanying hemorrhage, perforation of the bowel, shock and acute dilatation of the heart muscle may be used. Any extensive hemorrhage, except within the cranium, will be accompanied by a sudden fall in pressure, with occasionally a fleeting rise. This is true also of perforation of the bowel, there being here, too, possibly a fleeting rise from peritoneal irritation. In typhoid fever, therefore, if for any reason hemorrhage or perforation is suspected, a sudden fall in pressure of 10 or 15 mm. or more will confirm our opinion that one or the other exists. The diagnostic significance of the fall accompanying shock is too well known for further mention, for it seems to be established that the seriousness of shock is in direct proportion to the fall in pressure, and measures undertaken to overcome shock will be of no avail unless the pressure can be raised to approximately its level at the incidence of shock.

Acute dilatations of the heart muscle: No more graphic illustration of the clinical significance of sudden falls in pressure is possible than that accompanying dilatations, nor is there anything in medicine more gratifying than seeing a pressure restored as the dilated, acutely decompensating mucle becomes able to function. For example, a lobar pneumonia, previously doing well, experiences a dilatation with a systolic fall from 110 mm. to 75 or 80, becomes cyanosed, cold, and death seems impending. Under proper treatment, venesection for example, the heart muscle is again enabled to employ the proper energy to maintain the circulation, the pressure rises and the patient perhaps makes an uneventful recovery. To the recognition of the significance of the sudden fall in pressure alone and of itself may be attributed the final result.

The Management of Inconstant Pressures.

This, of course, depends on recognizing the causative factors involved, as well as the mechanical significance of sudden rises or falls in pressure. The exact point of high or low pressure at which life is possible has never been ascertained, so far as I know. I have seen systolic pressures over 300 and below 80. But the significance of sudden rises or falls in pressure is well understood.

The measures at our disposal for regulating these sudden variations and restoring previous level are rest, diet, heat, purgatives, hydrotherapy, certain drugs with selective action on the vasomotors, and venesection. Rest is indicated in either event, usually absolute, in bed, mental as well as physical.

Purgatives are indicated in high pressure variations only, except possibly in those low pressure cases where the fall is due to an overwhelming intoxication in intestinal stasis, or blood retentions.

Hydrotherapy, in the form of hot packs, aids elimination, in sudden rises due to toxic conditions. Sufficient heat, preferably dry however, is indicated also in sudden falls as in hemorrhage and shock.

Drugs. Certain drugs are available in reducing pressure on account of their specific action and certain others are valuable, though chiefly for their secondary effects. The drugs commonly used for their specific action are amyl nitrite, nitroglycerine, potassium nitrite, sodium nitrite, erythrol tetranitrate and diuretin. For brevity's sake, their dosage and methods of administration are omitted. But the very important fact must be mentioned with reference to the nitrites that in some individuals one of the group may be practically inert, whereas another may be very potent. A case is cited in which sodium nitrite had no effect whatever, nitroglycerine caused a reduction of 50 mm. and erythrol tetranitrate a rapid fall of 110 mm., the patient going into collapse: in another case nitroglycerine and erythrol tetranitrate had very little effect, while a reduction of 65 mm. followed the use of sodium nitrite. The chief drugs that reduce pressure through effects other than upon the vessels themselves are the purgatives, veratrum viride, aconite, thyroid extract, the salicylates, anesthetics and morphine. The drugs to be relied upon to raise pressure are suprarenalin, pituitary extract, strophanthus, digitalis, caffeine, oxygen and atropin, at least in falls of pressure accompanied by edema of the lungs.

Venesection is mentioned last, not because of its trifling importance but for the sake of emphasis. Venesection is useful under certain conditions to regulate either sudden rises in pressure or sudden falls. In the sudden rise of the pre-apoplectic state or the pre-eclamptic, free venesection may prevent either disaster. Conversely, in the sudden fall of acute cardiac dilatation, free venesection, as in the case mentioned above, may be our only means of saving life.

1009 *West Franklin Street.*

BIOLOGY AND MODERN MEDICINE.*

By CHARLES MINOR BLACKFORD, M. D., Staunton, Va.

The modern science of biology, the science of living organisms, has been a direct outcome of the researches of medical men since the Renaissance. Before that period of great intellectual activity, it had been taken for granted that life in the lower organisms arose spontaneously; that maggots, for instance, originated in decomposing meat and that flies came into being in piles of rotten filth, but, as observation became more accurate, and especially after the microscope was applied to the study of the lower forms of organisms, the idea of spontaneous generation gradually lost ground. At last William Harvey, the great discoverer of the circulation of the blood became convinced that there is no life which has not sprung from antecedent life and voiced this opinion in the famous dictum, "Omne vivum ex vivo" or "ex ovo":—all life from life or from an egg.

This view of the source of life encountered many and bitter opponents, but it remained merely an academic question until within the present generation. When Koch, Pasteur and Lister announced that living organisms are responsible for many of the diseases of both animals and plants and that if these organisms be prevented from gaining lodgment, or be killed after they gain access to the victim, the diseases which they cause will not occur or will be checked if they have begun, the battle over the origin of these organisms began to assume the gravest importance. It is useless to review this battle before this audience; it is sufficient to say that the advocates of spontaneous generation were utterly routed and that the basis on which much of modern medicine and surgery rests is the belief that the micro-organisms causing diseases are incapable of spontaneously coming into being. All of modern hygiene rests on this basis, and the success which has followed the efforts made within the past quarter of a century to banish endemic and epidemic diseases would not have been attained were it possible for the organisms causing such diseases to arise spontaneously.

This statement applies only to the organisms which are sufficiently advanced to be recognizable as such. We have good reason to think that the simplest form of animal or vegetable organisms are far more complex in structure than are inorganic salts. An amoeba or a bacterium is the result of a long line of evolution from the colloidal compound in which the first signs of vital energy may be found, and when compared with such compounds, these single celled organisms are as far in advance of them as man is ahead of the amoeba or bacterium. These single celled organisms are capable of reproducing their kind, and so far as our present knowledge goes, they come into being

* Read at regular meeting of Augusta County Medical Association, October 6, 1920.

only as products of antecedent cells.

The chemical basis of all living cells is a very complex chemical body known as protein. A recent analysis of the protein in our red blood corpuscles gives it the formula $C_{680}H_{960}N_{154}FeO_{178}$, and this is by no means the only form in which it exists. Molecules of protein are arranged in some manner at present unknown to form the still more complex compound, protoplasm, which Professor Huxley called "The Physical Basis of Life." We are familiar with the groups of compounds known as polymeric, in which the same elements are combined in the same percentages and yet which vary most markedly in their properties, and so it is not surprising that so complex a body as protein should have polymeric forms which differ widely. As Professor W. B. Hardy says, as quoted by Macnamara*,

"All proteids are not the same proteids; there are proteids of men, others of beasts, others of fishes and others of birds. The properties of a complex substance like protein are defined not so much by the kind of atoms or number of elements of which it is built up, as by the structural arrangement and the motion of those atoms in space. He gives as an example the molecules of two chemical substances, benzonitrile and phenylisocyanide, each of these being composed of seven atoms of carbon, five of hydrogen and one of nitrogen. There is a small difference in the arrangement of these atoms; this difference so alters the properties of the two substances that one is a harmless fluid with an aromatic smell; the other is an offensive poison. It is evident from the complex nature of the elements of a proteid that its molecules must be of far larger dimensions than the molecules of inorganic substances; but the larger the size the greater the probability of variation of its elements in detail by the action upon them of various forms of energy. As we have elsewhere stated, it is, we hold, in consequence of the unique structural arrangement and motion of the elements which constitute protoplasm, that it acts as a transformer of chemical and other kinds of energy into phenomena characteristic of living matter."

A question which at once arises is "What do we mean by living matter and how can we tell living from non-living matter?" At first glance this seems to be extremely simple, but a slight examination will show that it is by no means as simple as it might be. A living organism supplied with nutriment, tends to increase in size while keeping a fixed shape, and this was long thought to be characteristic of life, but a crystal will do the same. If a tiny nucleus be immersed in a super-saturated solution of copper sulphate, for instance, the salt will leave the solution and will build up a body of such definite shape that its form can be used for identification as can the shape of a fish. Furthermore, if a crystal immersed in such a nutrient fluid be broken or wounded, the injured part will be repaired by a deposit of fresh material even more perfectly than will an injury inflicted on a living organism. There are many phenomena exhibited by crystalline substances which simulate those of life so closely as to give us pause in drawing any hard and fast lines between them.

This is neither the time nor the place to discuss the origin of life or to compare the evidence which leads us to think on the one hand that life originated once for all and that all living beings have a lineage stretching back through almost infinite time, or, on the other, to believe that the origin of life is a purely chemical process which is going on all the time and that new masses of colloidal matter possessing the power of motion and assimilation—in other words, vital characteristics—are constantly being formed. Be this as it may, living beings, as the biologist and the physician regard them, have gotten far beyond the stage of potential life, and the simplest forms are known as cells, tiny masses of protoplasm which can move in response to stimuli, or, apparently, in accordance with what resembles the will power of higher organisms, and which are capable of producing other cells more or less like themselves. These cells were first recognized in the blood of the frog by the Dutch investigator Swammerdam, in 1658, and in human blood by his equally famous countryman, Leeuwenhoek, in 1673; these discoveries following the wave of blood investigation which came as a result of William Harvey's discovery of the circulation in 1618. Nearly a century later Hewson found that the blood contained numbers of colorless corpuscles which he called "Leucocytes", (1770) which were capable of

* N. C. Macnamara, F. R. S. of England and of Ireland; Fellow of the Calcutta University, in "Organic Evolution; Darwinian and DeVriesian." Annual Report of the Smithsonian Institution for 1911; page 364.

spontaneous movements; of passing through the walls of the blood vessels and "wandering" through the body by the extension and retraction of processes from the interior of the cells; of taking into themselves small particles of foreign bodies which are either assimilated or are extruded from the cell, and, finally, are capable of reproducing themselves by dividing into two or more cells, apparently identical with the originals. These white blood cells are strikingly like the uni-celled amœbae,—so strikingly, in fact, that they are called amœboid cells.

The fact that all of the tissues of animals and plants arise from the development of ova or of seeds has been known for centuries, and Empedocles, nearly five hundred years before Christ, taught some of the details of embryology which are still believed to be true. About 1840, Schwann showed that the organs of the bodies of animals are composed of cells which vary in structure, appearance and composition according to the function of the organs of which they are parts, and in 1856, Rudolph Virchow published his classic work, "Cellular Pathology", in which he showed that diseases affected these cells, producing recognizable changes in them, and that the effects of diseases were due to the inability of diseased cells to functionate properly. Since that time the work of vast numbers of students has shown that the cells making up the highly differentiated tissues of the body are all derived from the uniform cells formed by the fission of the ovum, and that while the embryo is thus developing from a simple structure into an extremely complex one, it so closely parallels the evolution of the higher organisms that Ernst Haeckel has laid down as a dogma his famous saying that "Each individual in the course of its development, epitomizes the history of its race."

The fact that the apparently uniform cells, formed by the fission of the ovum are capable of developing into such widely divergent bodies as brain cells and bone cells, gave great force to the claim that species and genera of organism can and do undergo great changes, but though this power was recognized, the causes underlying it remained unknown. One fact became well established however, which is that before a cell can reproduce itself, a stimulus of some sort must be applied to it, though, in some instances, more than one reproduction may be brought about by a single stimulus. This is called the alternation of generation, and some of the organisms in which this occurs are of medical importance. The tape worm, the cysticercus cellulosae of measly pork, and several other parasitic organisms, are capable of this form of reproduction.

The stimulus to reproduction which is most common is that supplied by another cell which generally comes from another organism. Among the unicellular organisms this is called conjugation, and the two individuals coalesce into one which then begins to subdivide. In the case of the amœba and other one-celled beings, the division of the mother cell results in daughter cells which are precisely like the parent, but if the impregnated cell be an ovum of a higher organism, the process goes much further. Although at first the daughter cells are exactly alike, so far as the means of research at the present time will permit us to see, they soon begin to gather into layers from which are developed tissues differing markedly from one another. When this development is complete, the cells forming the nervous system are readily distinguishable from those of other tissues; muscle cells, bone cells, epithelial cells, and so on, are readily recognized, and a complete science known as histology has been built on the study of the structure of animal and vegetable tissues. It has been found that the several organs are composed of a framework of connective tissue, and that this framework acts as a skeleton on which rest the more delicate cells that perform the function of the organ. For instance, the thyroid gland consists of such a framework filled with masses of cells of a peculiar kind which can be washed out, leaving the gland merely a spongy mass of connective tissue. Certain animals, the sponge for instance, are constructed on the same plan. The sponge has a silicious skeleton which is the sponge of commerce, and on this rests a slimy mass of cells which compose the animal proper. Between the cells forming the skeleton or framework and the active cells which constitute the functionating part of the gland or the tissues of the animal or plant, there is a great difference, but as both sets of cells arose from the reproduction of cells which were apparently identical, it is obvious that the difference came about in the process of development, though as

yet we have been unable to define it or to determine the causes which produce it.

The power of reproduction which cells possess differs so widely as to throw cells into two great groups:—those which only reproduce cells like themselves and those whose offspring differ from the parent. The great majority of the cells composing the bodies of the higher organisms belong to the first class. Thus, epithelial cells will produce epithelial cells only; muscle cells will produce new muscle cells and so on, but in most organisms there are certain cells which have the power of producing offspring which will develop into new individuals composed of a great variety of cells. These are of two varities, the male or spermatozoa and the female or ova, and in all of the higher organisms they are produced by well defined organs, known as gonads. Among the lower organisms this is not the case, as was shown in certain sponges by H. V. Wilson*, Professor of Zoology in the University of North Carolina. His experiments were carried out at the Beaufort, N. C. Laboratory of the United States Bureau of Fisheries during the summers of 1907 and 1908, and his material was what is known as the red oyster sponge, a species which grows abundantly in Beaufort harbor. It first encrusts stones, piles, oyster shells, and so on, but later forms lobes and becomes a complexly branched body. The skeleton consists of a horny basal plate from which spring spicules of a fibrous silicious nature, interlacing and forming hollow spaces which are filled with soft, red cells. Wilson cut the sponge tissue into bits about one-fourth of an inch in diameter and put these bits into bags of fine bolting cloth. By immersing the bags in bowls of sea water and squeezing them with his fingers, he forced the dissociated cells out into the water. He says:—

"The cells streaming through the cloth present the appearance of red clouds. They quickly settle down to the bottom of the dish like a fine sediment. * *

* * "If a drop of the sediment so obtained be examined at once on a slide with a high power, the preparation is seen to consist of myriads of separate cells together with a few spicules. There is a certain resemblance to a blood preparation, which at once suggests itself, sea water occupying the place of the plasma. * * * Fusion of the granulated cells begins immediately and in a few minutes' time most of them have united to form small conglomerate masses which at the surface display both blunt and elongated pseudopodia. * * * The small conglomerate masses first formed early begin to fuse with one another while they still continue to incorporate outlying cells. The space under the cover glass thus soon becomes occupied with numerous small balls or masses. As the sequel shows, these masses continue to unite and eventually restore and regenerate the sponge. They may be spoken of, therefore, as masses of regenerative tissue, and the observations already described make it plain that they are composed chiefly of the spheroidal granular cells or amœbocytes, but that other cells enter into their composition."

Although this is interesting, the fact that the cells conjugate seems to indicate a sort of sexual fertilization; a form of reproduction which is common, and these experiments do not have the possibilities which those carried out by Dr. Jacques Loeb at the Rockefeller Institute for Medical Research possess. By slightly raising the alkalinity of sea water by addition of certain bases, among them common sodium hydrate, he found that the eggs of the Californian sea urchin could be fertilized by the sperm of various species of star fishes, although this did not occur in normal sea water. This indicated that the stimulus to fission and production was largely chemical and not wholly biological, and he then tried to produce fertilization by purely chemical means. He found that by putting the eggs of star fishes into sea water of increased salinity and osmotic pressure for about two hours and then putting them into normal sea water, many of the eggs segmented and produced normal larvae, although usually none of these eggs will develop without the access of a spermatozoon.* This seems to show that the action of the living spermatozoon is chemical only, and Loeb then tried a long series of experiments to determine a better method of producing artificial or chemical parthenogenesis. This method† is as follows:—

* Wilson, H. V. Development of Sponges from Disassociated Tissue Cells. Bureau of Fisheries (U. S.) Document 750. Issued June 16, 1911.

* Loeb, J. Artificial Parthenogenesis and Fertilization. Chicago, 1913.

† Loeb, J. The Organism as a Whole from a Physicochemical Viewpoint. N. Y., 1916.

"The eggs are put for from two to four minutes into 50 c.c. sea water containing a certain amount of N/10 butyric acid. Ten or fifteen minutes later the eggs are put into hypertonic sea water (50 c.c. sea water plus 8 c.c. 2½ m. NaCl, or Ringer solution or cane sugar) in which they remain at 15 C. from thirty-five to sixty minutes in the case of *Purpuratus* (a Californian sea urchin), and from 17½ to 22½ minutes in the case of Arbacia (an Atlantic sea urchin) at Wood's Hole. If the eggs are then transferred to normal sea water they will develop. * * By this method it is possible to imitate the activating action of the living spermatozoon upon the egg in every detail and eggs treated in this way will develop in large numbers into perfectly normal larvae. We shall see later that they can also be raised to the adult state."

Growth and reproduction are the most characteristic phenomena of what is called life; that form of energy which is displayed in animals and plants and which distinguishes them from mineral and metallic substances and from what we at present call chemical compounds. The bringing about of these phenomena by chemical and physical means seems to be the opening of great fields of knowlelge, and all that can be learned in relation thereto is worthy of the closest attention. Having shown that the germ-cells of organisms can be made to develop by purely chemical stimuli, the next step is to see what may be done with organs or organic tissues when removed from the bodies in which they normally exist.

As yet we do not know how to produce living matter, and every experiment has needed living cells as a base. We do not know how to prevent death, for, so far as our present knowledge goes, every organism must die after a greater or less time, though we do not know why this fate should be inevitable. It is, however, a matter of more than mere interest to know that we can prolong the life of organs, of tissues or of cells after they have been removed from the organism, and that such parts can be made to lead for a longer or shorter time an individual and independent life. The organ on which these experiments were first tried and which has been most thoroughly investigated, is the heart. As far back as 1887, Renard and Loye reported a human heart which continued to beat spontaneously and completely for 25 minutes after a legal decapitation, and by massage of the heart, its beating has been restored after it had been arrested for forty minutes (Rehn). The heart of a dog has been known to beat 96 hours after death; that of a tortoise for eight days, and Burrows (1911) observed the heart of an embryo chick to beat for three days after its removal.* By irrigation of the heart, and especially of the coronary vessels, this period may be much prolonged.

Other cases of the reviving of suspended animation have been reported, but though these seem marvellous, they are no more so than the awakening of plant life after the winter sleep or the revival of animals after hibernation. We know nothing of these suspensions of vitality except that they exist, and it is only their familiarity that makes them commonplace, but the work done by Dr. Alexis Carrel, of the Rockefeller Institute for Medical Research, has opened the doors to new means of investigation which have vast possibilities. This work has shown the possibility of maintaining the life of tissues and organs after being removed from the body and has demonstrated the fact that such removed tissues and organs may be caused to grow *in vitreo* and to build up new parts of highly specialized tissues. In 1910, Drs. Alexis Carrel and Montrose T. Burrows† published the results of some experiments conducted by them on dogs, cats and an adult frog. These consisted of extirpating small fragments of tissues of an animal, inoculating them aseptically into a plasmatic medium taken from the same animal, and sealing the materials in hollow glass slides. The slides were placed in an incubator and kept at a constant temperature of 37° C., and the microscope was also placed in a special thermostat which was kept at the same temperature. The medium was inoculated with bits of thyroid, suprarenal, kidney, cartilage, bone marrow, etc., and the results showed that each of these several tissues grew and reproduced new tissue of its kind. The most important results were those from the kidney. Of this experiment the authors say:

"But very much more important were the results of the cultivation of the kidney. Two plasmatic media were inoculated with small

* Legendre, R. Translated from La Nature, Paris, of November 2, 1912, and published in the Annual Report of the Smithsonian Institution for 1912.

† Journal of the American Medical Association, October 15, 1910.

fragments of a kidney of a young cat. Twelve hours later, fusiform cells were protruding from the tissue. After twenty-four hours a great many cells had invaded the plasma all about the renal tissue. * * * On the fifth day one of the cultures was fixed and stained with haematoxylin. We saw many karyokinetic figures in the cells which had proliferated through the plasma. A tube had begun to grow from the tissue into the medium. The cells showed a conditon of great activity.

"The other culture was allowed to live to the sixth day and an exceedingly active growth of the cells took place. In the morning, we observed a few tubes growing from the renal substance into the plasma. In the evening they were much longer and curved at their blind ends. At the beginning of the seventh day, the culture was fixed and stained. Around the renal tissue a very large number of fusiform and polygonal cells had formed. A few tubes, composed of a lumen limited by epithelium-like cells, had passed from the fragment of the kidney for a distance into the plasmatic medium. They had the appearance of renal tubules.

"These experiments demonstrate that adult tissues grow very easily outside of the body. Tissues like cartilage, and even like renal substance, can be caused to develop in something like normal manner under entirely new conditions."

Dr. Carrel has carried these experiments to a stage of high perfection. At first he found that the duration of life in these cultures of tissues was very brief, and that after about fifteen days at the longest, the rate of growth began to decrease until it stopped. Following this stoppage same death and disintegration. He found that this could be prevented, as this senility and death was only a result of the exhaustion of the nutrient medium and the accumulation of waste products, and, by an improved technique, he was able to rejuvenate his cultures. He cut out the bit of coagulated plasma containing the tissue and the cells springing from it, and after washing in Ringer's solution (Sodium Chloride, 0.7 p.c., Potassium Chloride, 0.3 p.c., Calcium Chloride, 0.025 p.c.) for several minutes, the culture was placed in a solution of three parts of normal plasma and two parts of distilled water. When the senility began to show itself again, this process was repeated with fresh plasma solution, and, as Dr. Carrel says:* "These results demonstrate that rejuvenation of the cultures of tissues is possible. They show also that, under the conditions and within the limits of the experiments, senility and death are not necessary, but merely a contingent phenomenon."

The experiments were carried on with both normal and pathological tissues. Among the most interesting were those on the artificial culture of chicken sarcoma in the plasma of the fowl bearing the tumor and in that of a normal animal. In the first case the growth was very active; the new cells covering from fifteen to twenty times the original area in the course of twenty-four hours. The growth in plasma derived from a normal animal was active, though not so extensive as in the first case, while in the plasma from another sarcomatous animal, the growth was slight if it occurred at all. From this he deduced that the plasma of a sarcomatous animal acquires the property of inhibiting the growth of a sarcoma taken from another animal. At once the nature of the inhibiting substances was sought. Are these substances secreted by the tumor or are they antitoxines produced by the organism as a reaction against the tumor? By adding a little sarcomatous extract to the normal serum in which the sarcoma cultures were growing, the growth was markedly accelerated which showed that the inhibiting power does not lie in any secretion of the tumor, but must be produced by the organism as a defense against the malignancy of the tumor.† The fact that the growth *in vitreo* may be stimulated or checked gives rise to the hope that some means may be found of checking the growth of malignant tumors in the bodies of living animals.

It is impossible to go more fully into the experiments which have been carried on regarding the nature of growth and of degeneration. When Dr. Carrel found that a tissue which will not grow in the serum of an old chicken will be stimulated to active development by the addition to the serum of an extract from a nine day fœtal chick, he seems to be on the verge of discovering the long sought elixir of life. Were our present ignorance of vital chemistry less profound, we might determine the agents which stimulate or inhibit the devel-

* Carrel, A. Journal of the American Medical Association, November 11, 1911.

† Carrel, A. Journal of the American Medical Association, January 7, 1911.

opment of tissues and organs in the body, and by slightly altering the composition of the blood serum, produce wonderful therapeutic results. A broken bone now requires some forty odd days to reunite; but were we able to so alter the composition of the serum as to stir the osteogenetic cells to their greatest activity, this time might be reduced to some four or five days. As stated above, the first tissues artificially cultivated, lived for only about a fortnight, but last year Dr. Ebeling, of the Rockefeller Institute for Medical Research, described† a strain of connective tissue which he had been cultivating for seven years and which gave no signs of senility. It may be that future research may show that senility in the human being is preventable. At present this may seem impossible, but many, if not most, of those about me can remember the time when suppuration was looked on as a necessary step in the healing of a wound, and when the advocates of asepsis and antisepsis, with their claims that inflammation and suppuration were needless and were harmful, were looked on as idealistic enthusiasts. Truly no man knows what tomorrow may bring forth, and patient, skilful and persistent delving into the secrets of Nature may bring even greater results in the future than they have done in the past. About 1835 it was seriously proposed that the Patent Office be abolished, because there was nothing more to be invented. We of today see that the surface of invention had barely been scratched, and that most of the conveniences and necessities of our time had not then been imagined. It is beyond the power of any man to say what can and what cannot be learned, and it is more than possible that the researches into biology made during the past two decades, may give to medicine a new birth from which will spring a science and an art of which we now have no conception.

THE VENEREAL DISEASE PROBLEM.*

By W. D. KENDIG, M. D., Kenbridge, Va.

Venereal diseases have existed since the earliest times. Moses in the Book of Leviticus gives a description of gonorrhea. Hippocrates and Celsus described both gonorrhea and venereal ulcer. Gonorrhea was so prevalent among the Jewish tribes that Moses issued certain rules for the guidance of the people to prevent is spread. Records show that in 1493 syphilis was well known in Europe. Hunter, in 1794, was the first to study this disease definitely. Prior to 1900, certain scientific data was recorded in their bearing on the reduction of syphilis and gonorrhea; but no effective health measures were instituted. From 1900 to 1912 much work along this line was accomplished and new facts of the greatest importance were discovered. Along medical lines, much was accomplished with gonorrhea, regarding its ravages, communicability, and treatment. Recent advances in medical science have given us new weapons with which to attack the venereal diseases, and we are now able to approach the problem from a different angle.

The beginning of the new campaign dates from the brilliant discovery of the causative organism by Schaudinn and Hoffman in 1905. The following year brought the ingenious specific reaction devised by Wassermann, whereby we are able to determine the existence of syphilitic infection and, to cap it all, came the introduction of salvarsan by Ehrlich in 1910. The great value of these additions to medicine is universally recognized for shortening the period of infectivity and they improve the chances of ultimate recovery. The routine use of the Wassermann reaction has disclosed some startling revelations. Dr. McLester upon examination of 300 patients found that 56 or 18.8 per cent gave a positive Wassermann reaction.

We know venereal diseases are communicable infections due to known organisms. Their methods of transmission are known, and a practical laboratory and clinical technique has been worked out for diagnosing each of them. They find their chief opportunities for dissemination in the sex relations of infected with non-infected individuals. They are widely prevalent all over the world, and are not limited to any age, race or sex. They are largely, but not exclusively, transmitted through the promiscuous sex relations defined as prostitution, and condemned by society as harmful alike to the health, morals and social progress of a people.

Before this audience it is superfluous to discuss the fearful ravages caused by gonorrhea

† Ebeling, Albert H. Journal of Experimental Medicine, December 1, 1919.

* Read before the Southside Virginia Medical Association at its meeting December 9, 1919, as part of Subject for General Discussion, "Venereal Disease Problem and Control."

throughout the civilized world. You know the relation of syphilis to locomotor ataxia, to general paresis and to diseases of the heart and circulatory system. You know of the countless miscarriages due to syphilis and of the many innocent victims of prenatal infection. You also know the large number of women annually subjected to mutilating operations because of gonorrheal infection.

Interesting figures as to the prevalence of gonorrhea are found in the report of the Surgeon General of the army of 1918. The proportion of the recruits of draft age (21 to 31) who were found to have gonorrhea was between two and three per cent. Colored troops showed two and a half times as much as white troops. The examination of drafted men for the army revealed that five men came into the army with a venereal disease to every one that developed it after he was in the army, so you see that venereal diseases are not to be attacked as a war epidemic only, but as a peace problem also. Examination at mobilization camps showed that 5.4 per cent of the second million drafted men had some form of syphilis, gonorrhea, or chancroid. Virginia had 6.91 per cent, and Florida the highest, 15.6 per cent, while Vermont had the lowest 1.30 per cent.

At the beginning of the war in all the departments of medicine, except that of Genito-Urinary diseases, there was a fairly well defined system which governed these departments, and they were simply transferred into the army and navy as workable organizations. The one mostly needed, however, was that department of medicine that dealt with Genito-Urinary diseases, and such a department did not seem to be organized, so that it would take care of the great problem, with the greatly increased number of infected persons out of all proportion to other diseases.

Preventive medicine has been forcibly brought to the front since the end of the war. There has been a marked definite turning point in public health activities, and we are facing a time of reconstruction in the methods of health administration. During the war the dominant thought underlying this activity in health matters, was to conserve the man power, for anything that would keep the men healthy would largely accomplish the result.

General Gorgas said early in the war: "Venereal diseases present the most serious communicable disease problem of the war. The army loses more days of service from its men on account of venereal diseases than from any other cause. During the twelve months ending September, 1918, there were 170,000 cases of venereal diseases in our army (in the United States). This means a loss of approximately two and a quarter million training days in a year. Add this to the cost of medical care and hospital equipment, and the loss of possible relapse later and you commence to see what venereal diseases cost a nation at war. During the period from September 2, 1917, to May 31, 1918, the annual rate per thousand for our troops in the United States was 102.3; the rate from all other communicable diseases 29.4 per cent—pneumonia, scarlet fever, typhoid and paratyphoid (measles not included)."

The Surgeon General met the emergency and it is our duty, as physicians to do likewise since it is estimated that the number of cases of venereal diseases are more than have ever been known since the sixteenth century. Believing that it is the physician's duty to humanity, I would like especially to try to arouse the profession to the importance of some methods of control for syphilis and gonorrhea, the greatest health problem of today. As a peril to the family, as an injury to the health, vitality and physical progress of the race, and as a danger to the public health, venereal diseases are regarded as the greatest of modern plagues, and their prophylaxis the most pressing and important problems of preventive medicine that confront us at the present day. It seems to me the importance of venereal diseases and the change in public sentiment towards their control has been the most marked of any disease brought into the limelight since the war, for, strange to say, the public generally have been reluctant to deal frankly and forcibly with the venereal disease problem. Both the profession and the public must face the facts and cooperate in a complete program of medical and preventive measures as increased modes of communication and transportation, brought on largely by the war conditions, have extended the venereal possibility.

We have come to the conclusion that we are years behind in our efforts to control syphilis. If we had spent one-fifth of the money and energy in dealing with syphilis in its early

stages, that we are now spending in its later stages, we should have accomplished results infinitely greater. There are two problems facing any one who attempts to interest the State in the treatment of syphilis in its early stages. In the first place, it is necessary to know something about the number of cases infected and their distribution: in other words, the object is statistical. If this were the only or main object, we should have little ground for insisting on reporting cases of venereal diseases, but such is not the case. Far more important than the statistical knowledge thus gained is the means for individualizing our efforts for securing an early and accurate diagnosis. The modern diagnosis of syphilis in the early primary stage, if possible before the organism has spread to the lymphatics adjacent to the primary lesion, but at all events before the Wassermann reaction has become positive, is far more reaching in its medical and social significance than the finding of the tubercle bacillus in early tuberculosis. It is more significant, not because it points to a dubious prospect, but to instant and effective action. The institution of radical treatment of syphilis at this stage accomplishes, what a syphilologist would term, the abortive or radical cure of the disease. According to Dr. J. B. Stokes, of Minneapolis, "The first injection of salvarsan puts an immediate end to the infectivity of the patient. Within 8 to 12 hours there are no longer any organisms obtainable from the lesions. Repeated injections of salvarsan with mercury for a suitable time, seldom less than a year, seem to accomplish a sterilization of the body." Upon the first 4 to 10 days of the primary lesion while syphilis is still a practically local infection, diagnosis should concentrate its every resource and treatment, for never again in the history of the disease for the patient and his fellowmen will there be such another moment. Thus far as a profession we have not had a just conception of the vital importance of early diagnosis in syphilis. It has taken this war to teach us and the world that modern knowledge of this disease has never been taught in medical schools.

The science of eugenics assumes special importance in preventive medicine. Eugenics has been defined as "the science of being well born." Can any one say that a person with a syphilitic parent is well born? A little pamphlet gotten out by the U. S. Public Health Service has this to say: "Sex links the man who marries to the past and to the future in a great chain of human beings. His only means of affecting the racial stock of his country is by his physical fitness. By one false step he may infect the stock, topple over the hopes of fathers and mothers reaching back for thousands of years,—generations, patiently building up sound bodies and minds—and blight the lives of distinct individuals of generations to come. The spark of life is a sacred trust to be received reverently and transmitted undimmed to future generations. Sex uncontrolled is disaster and wreck. Sex in control for men means Power."

One of the best protections we have against the disease of the mind and body is that which is inherited from our forefathers. The whole problem of improving the human stock, not only from the medical viewpoint, but from the broader sociological standpoint, is based upon the breeding of the fit and the elimination of the unfit. The success of eugenics depends almost entirely upon our knowledge of heredity, and the great part syphilis plays in heredity is too well known to you to be necessary for me to discuss. Suffice it to say, that something ought to be done to regulate the marriage of unfit, diseased people.

I cannot do better than close in the words of Dr. J. H. Landis, "Until the time arrives when man shall be the master of its sexual instinct instead of its slave, our duty as sanitarians is as binding to protect him from the evil consequences of his slavery as it is to safeguard his food and water supply; our moral responsibility to protect his wife and children as great as if he exposed them to the plague.

"While diverse opinions paralyzed efforts directed to the sane solution of this problem, degeneracy is gaining a firmer hold on future generations. While we question one another's honesty of purpose, when our opinions differ as to what shall be done, the pit to our descendants is being made deeper and wider. What shall we do? Act or theorize? Do the best we can with man as he is, or dream of ideal conditions, impossible of attaining on this side of the grave?

"Shall we build more hospitals, more insane asylums, more asylums for the blind, and more

penal institutions in which to house the victims of this trouble, while the seeds of moral suasion are being sown, cultivated, and brought to full fruition in the dim future, or shall we apply the same sanitary principles which have stayed the plague, eliminated yellow fever, stopped the spread of cholera, and rendered smallpox less deadly than measles?"

THE CONTROL OF VENEREAL DISEASES*.

By E. L. KENDIG, M. D., Victoria, Va.

The recent World War has opened the eyes of the thinking people of this country to the necessity of some practicable control of venereal diseases. It has been known heretofore to the medical profession, to students of social hygiene, and to the public, in a vague way, that a certain percentage of our population was infected with venereal diseases, but, until revealed by this war, it was impossible to ascertain even approximately to what extent. Reports[1] available from the War department show that 5.04% of all men drafted into the army of the United States from civil life during the recent war, were found to be infected with some form of venereal disease when they arrived at camp. This serves as a valuable guide in reckoning the prevalence of these diseases among men in civil life of draft age. The secret and personal nature of these diseases make control a difficult matter.

The United States Army has had a systematic and rigid method of control for venereal diseases for a number of years. By this method[2] venereal diseases in the army have been reduced from an average of 170 per thousand each year in 1911 to 86 per thousand in 1913. In the enlistment[3] of men for the larger army during this war, it was discovered that five times as many men per thousand had contracted venereal diseases before enlistment in civil life as had contracted it in the army. More men were incapacitated in the army from venereal diseases than from any other cause. The problem of control in civil life is, for obvious reasons, not so easy as in the army. In order to protect the soldiers from infection in the community around the encampments, in order to fight this infection in the civilians, who from time to time would be called into the army, and in order to increase the efficiency of the whole people, the Government mapped out a nationwide campaign for the control of venereal diseases. The remarkable success of this campaign, in so short a time, is still fresh in our minds. The war is over. It is not necessary now to fight Venereal Diseases in order to help lick Germany, but it is necessary to continue this fight on these diseases in order to save our people from the consequences.

A medical examiner[4] in the army, after seeing with his own eyes the hundreds of diseased young soldiers, said "Our ignorance and failure in handling the problem of venereal diseases constitute the greatest crime of American civilization. This is the clearest lesson of the war".

The United States Public Health Service, by authority of the Chamberlain-Kahn act, recently passed by Congress, is continuing this fight on venereal diseases. Out of experience obtained in the Army and Navy, out of the experience obtained from the nationwide civilian campaign for the benefit of the army during the war, and by the advice of men who are especially able to help, the Public Health Service has mapped out a definite program of attack. Although I shall mention the different parts of this program in a general way, principally I desire to bring to our attention the physicians' art of this undertaking. I speak not from the standpoint of an expert or one especially learned in these matters, but I speak from the standpoint of the general practitioner. No one knows the problems and opportunities of a profession like the members of that profession, and I believe that great benefits could be derived in handling the medical measures of this campaign, if the active physicians of the country would help solve some of its problems from their experience.

I shall not discuss the effect of religious or moral influence in the control of these diseases. I will leave that to others. It is a fact, however, that in the past religious and moral influences have not been sufficient to control the spread of venereal diseases. Neither in the past have these influences been able to control crimes or other transgressions of the law. Punitive laws are enacted and rules for the conduct of the public are made to prevent such

* Read before the Southside Virginia Medical Society December, 9, 1919, as part of subject for general Discussion, "Venereal Disease Problem and Control."

transgressions of the law. In the same way some practicable measures, other than morals or religion must be employed also to help bring about the control of venereal diseases.

The United States Public Health Service has divided the campaign into a number of heads, including social, educational, legislative and medical measures.

The Social Measures include mainly the suppression of liquor and prostitutes. Prostistitution flourishes under the influence of liquor and venereal diseases follow prostitution. On examination[5] of 731 prostitutes in San Francisco, Stevens found 147 cases of gonorrhea, 243 cases of sypyhilis and 96 cases of infection of both gonorrhea and syphilis. Segregation and medical examination of prostitutes does not successfully prevent the spread of venereal infection. In many cases, the examiner will not have the time necessary to determine cases of mild or chronic infection. In others the prostitute will contract the disease just after the examination and spread it to scores before another examination. And again, the fact that a red light house has been segregated and prostitutes in it have been examined makes the frequenters of that house less careful.

The Educational Measures employed for giving information to the public on venereal diseases include teaching the children at home, courses in schools and colleges, co-operation of the various social and religious organizations, distribution of literature, posting of suitable sign posters, use of moving pictures, and the employment of public speakers.

Suitable Legislative Enactments, are absolutely necessary in the control of these diseases. Even when the public is fully educated as to the nature, method of transmission, and evil effects of venereal diseases, laws properly enforced will be necessary to control the wilful and ignorant. It is not necessary here to enumerate or discuss all the pertinent laws to control such diseases. The United States Public Health Service[6] has published a bulletin dealing comprehensively with this subject. I will, however, call your attention to certain of these laws which concern the physician. A majority of the states have passed a law which requires each physician to report every case of venereal disease coming to him for treatment. This is very important in this campaign as it enables the Health Department to follow up those cases not reported as cured, and thereby prevent a further spread of the disease. It is also very important that this law be so enforced that it will not keep persons infected from consulting a physician. Some states require a report by number, others by name. Indiana requires the physician to report by name on a card which, with all other data, is returned to the physician upon receipt of notice that patient has been discharged as cured. Another problem is to keep those infected from going to quacks or druggists for treatment. A great many of the states have virtually put the quack out of business by prohibiting advertisements of cure for venereal diseases, lost manhood, etc. More than two-thirds of the druggists in the United States are voluntarily co-operating with the Government by referring all cases coming to them for treatment to the physician or clinic, and at the same time reporting the case to the Board of Health. Some method requiring this co-operation from all druggists should be adopted.

I believe in a more perfect unity of action between the National and State Health Departments. Health conditions in one State may directly affect those of another. The problem of health and prevention of disease is not county wide, not state wide, but it is Nation wide, and even more.

The Medical Program is the one which more directly concerns the physician. It includes prophylaxis, treatment of the disease and the relation of the physician to the whole problem.

The prophylaxis[7] employed in the army consists mainly of an injection of a 2% protargol or a 10% argyrol solution and an application of a 33% calomel ointment. The sooner it is used after exposure the better. It is not advised after twelve hours. This has been very effective in the army. Whether it can be used as advantageously as a routine in private practice, in the control of this disease, is an open question.

In this short paper it is impossible to go into the details of the different methods of treatment for venereal diseases. The standard treatment[8] employed by the army is concisely given in a little booklet published for the benefit of civilian physicians by the United States Public Health Service. The key note of this

book is that you should be sure your patient is well before he is discharged.

In sypyhilis an early diagnosis is desirable. The earlier the diagnosis, the better the prospects of a cure and the quicker the patient is rendered non-contagious and fit to work. But it is absolutely essential that a positive diagnosis is made before treatment is begun. During the chancre stage a positive diagnosis may be made by examining under the microscope the lymph from this lesion for the spirochæte. After the chancre has been in evidence about ten days, the Wassermann test can be used and repeated until a diagnosis has been definitely made. If diagnosis of syphilis is made, treatment should be begun at once. This treatment should be continued until repeated Wassermanns show a positive cure. Syphilitic infection may occur in chancroid, and for this reason every chancroid should be examined for spirochætes. I need not mention the methods of treating syphilis. The treatment of gonorrhea is a field which requires at the hand of the physician ability, tact and resourcefulness. The different forms, stages and complications of this disease require close observation of the progress of the disease and a full co-operation of the patient. This treatment, also, is too well known to be repeated here. The two glass test should be used with each examination to determine the location and character of the gonorrheal infection. A microscopic examination[9] of the discharges to determine the presence of gonorrheal and other pus producing organisms is strongly advised, but this, in my opinion, as a routine in general practice, is not necessary, except in cases of difficult diagnosis. The treatment of gonorrhea in women, except in prostitutes, requires extraordinary tact. A great many women have gonorrhea who do not know the nature of the disease or its consequences. It is very important in gonorrhea also to know your patient is well before he or she is discharged.

A physicain's work brings him into contact with several classes of these patients, which can be roughly divided into (1) prisoners, inmates of public institutions and prostitutes, (2) clinical patients; (3) private patients.

The first class include what is usually called the principal carriers of venereal disease. In the treatment of the prostitute, it is very important that she be cured before discharged. Every prisoner and inmate of public institutions should be examined for venereal disease, and those infected should be put on the proper treatment and this kept up until cured.

In the clinic for venereal disease we will see the pauper, the ignorant and those who do not care. These clinics as a rule have a follow-up system, by means of which the patients are in a large percentage of cases kept under treatment until cured. I believe it would be practicable to establish such a clinic convenient to every section of the country. This could be handled by local physicians on certain days and hours in the week and be supported mainly by the State or National Government. As done in some states, arsphenamine could be distributed free through these clinics. McLaughlin[10] advises that the clinic charge a low fee to each patient, which will help defray the expenses of service, and at the same time make the patient feel that he is getting treatment of value. At first glance, it might seem that the establishment of such a clinic would injure the work of the physicians in the community, but, when the class of such clinic patients is considered and the fact is brought to mind, that, before this campaign was begun, less than half of the venereal cases were treated by physicians, it is obvious that such is not the case.

To his private venereal patients the physician should be of great benefit. The physician in these cases is usually the only one who can render the service. In most cases the physician is the sole confidant of the patient. An intelligent, sympathetic and simple talk on venereal disease at this time will do much towards keeping that patient under treatment until cured, and at the same time educate and enlighten him in these matters, which will in in the future make this patient a valuable citizen in helping in this campaign in the control of venereal diseases.

Every physician should have on hand the literature on this subject issued by the Health Departments, and should miss no opportunity to give a copy to each such patient. This literature will be read at this time because, on account of his illness, he is intensely interested in such matters.

Dr. Bowdoin[11] sums up our part in this work as follows: "I would remind you that the private soldier who carried the musket and did the fighting is the boy who won the war.

Generalship is necessary, strategy is essential, but an army composed of only Generals, Colonels, and Majors would be a military joke and fit only for an organization of veterans. Someone must stand in the trench; someone must go over the top; someone, other than officers, must win the battle, and so it is in the fight against this greatest enemy of modern civilization, venereal diseases. The State and Federal Government may outline the plan, local authorities may establish clinics and distribute literature, but until the family physician throws himself into this fight, until he takes his scientific knowledge into the homes of his patients and places it at their disposal for the protection of the sons and daughters of his clients, the fight cannot be won."

I wish to emphasize the following points of interest to the physician in this campaign.

1. A co-operation between the physician, the authorities in charge of the campaign and the public.

2. A co-operation between the druggists and the authorities, preventing drug store treatment and directing those applying for such treatment to go to physicians or clinics so that they may be cured.

3. Prohibiting advertisement for cure of venereal diseases, lost manhood, etc, by quacks and makers of patent medicine.

4. A more perfect unity between the National and State Health authorities so that the health work may be more economically and effectively carried out, and the physician will be guided in his work by one department only.

5. Convenient public clinics for the treatment of venereal diseases in the poor and ignorant.

6. Examination of all prisoners and inmates of public institutions to determine presence of venereal disease and treatment of those infected until cured.

7. A report of each and every case of venereal disease by the physician to the authorities.

8. Education and instruction of each patient concerning the facts of venereal diseases.

9. Distribution of literature on these diseases to all patients under treatment.

10. Repeated tests both during progress and after apparent cure to determine presence of infection.

11. Continuous treatment of each patient until the tests prove a cure.

12. A report to the authorities of every patient who discontinues treatment until discharged as free from venereal infection.

13. And last but not least, the part the physician must play in his community in this campaign. He must become a leader of the intelligent men and women of this country in stamping out this dread disease.

In closing this paper, I can do no better than use the words of Dr. Pierce, of the U. S. P. H. S.[12]: "Other national campaigns against tuberculosis, trachoma or hookworm disease all have had social and economic complications of their own. But in the case of syphilis and gonorrhea there is added to these social and economic aspects of the problem the handicap of age-long tradition. We face a very slowly yielding prejudice against even discussion of these matters. We face the difficulty of directing human will and instincts. Such a demand on the physician and on every intelligent member of society, would seem appalling were the possibilities not testified to by remarkable demonstration of what has been done. Preventive medicine is one of the contributions to the world of the medical profession. To the medical profession the world in this after war day, turns in confidence for the solution of its deepest problems."

Bibliography

(1) V. D. Bulletin U. S. P. H. S. No. 47.
(2) Pusey, Jour. A. M. A. Sept. 28, 1918, p. 1022.
(3) Snow & Sawyer, Jour. A. M. A. Aug. 10, 1918, p. 461.
(4) Pam. When they come home, U. S. P. H. S. p. 2.
(5) W. E. Stevens, Gonorrhea in Women, Cal. State Jour. Med., 1918-16-260.
(6) Bulletin 39, U. S. P. H. S.
(7) Manual of Treatment of Venereal Diseases, U. S. P. H. S. p. 15—3rd edition.
(8) Manual of Treatment Venereal Diseases, U. S. P. H. S.
(9) Manual Treatment Venereal Diseases of U. S. P. H. S. p. 78.
(10) Public Health Reports, Feb. 22, 1918, p. 223-237.
(11) Venereal Disease Control, J. P. Bowdoin, read before Southern Med. Assn., Nov. 1919.
(12). Dr. C. C. Pierce, Jour. A. M. A., Aug. 9, 1919, p. 420.

IDIOPATHIC AND TRAUMATIC ILEUS.*

By A. G. PAYNE, M. D., Greenville, Miss.

Ileus! What is it? Who knows, and how accurately can anyone diagnose it? It is variously defined by all writers, one saying it is a complex of symptoms characterized by pain, vomiting, constipation and meteorism, and subdividing it into dynamic, adynamic and mechanical. Another says the contents of the alimentary canal may become arrested in their passage through the bowel, owing either to me-

* Read before the Mississippi State Medical Association, May, 1920.

chanical impediment, or to some imperfection in the action of the nervous and muscular apparatus; still another states: "We have been accustomed to define it as a malady characterized by certain cardinal symptoms, but it is better to call this disease a serious disturbance of the intestinal motor function, in view of the fact that one or more of the cardinal symptoms are not always present early in the malady."

Then, we have the so-called pseudoileus which is so often seen following abdominal operation and which varies considerably in different instances. This condition is to be clearly differentiated from true obstruction, although it must be admitted that it may run the entire gamut from simple distention to paralytic ileus itself. It is exceedingly common, and in its simplest form follows the rough handling, prolonged exposure and undue cooling of the abdominal viscera. There are individuals so constituted nervously as to seem susceptible to it.

But be it infectious meteorism, pseudoileus or true ileus, the subject is one of the most worrying with which the physician, both internist and surgeon, has to deal, and being one in which possibly so little can be done remedial, is why so little is said about it. We, as internists and surgeons, are always ready to advocate some treatment, laud or promulgate some operation that we can recommend, where some disease or condition can be relieved, or condition made more comfortable by such measure, but we all fear and dread that condition in which we can be merely onlookers with fear and dread. With either of the conditions of idiopathic or traumatic ileus, we have one that always and immediately puts the doctor who recognizes it in a state of fright and confusion. It is the time being, so to speak, when all doctors are internists; that is, we immediately run to medicine in our endeavor to arrest the meteorism that is present, whether it be mild or severe in beginning,— whether it be the mild over-eating type, or the severe food poisoning type, or traumatic ileus following work in the abdomen.

In most cases of the severe type, be they idiopathic or traumatic, the sentinel on duty, the trusted doctor, never asleep under such conditions, but all the time scared, begins the call to arms. When he has finished calling in his comrades, he has assembled calomel, castor oil, Epsom salts and croton oil. Then comes up from the rear saline, turpentine, and asafœtida enemata. These not vanquishing the dreaded, stalwart enemy, we call on the new and more up-to-date soldiers, pituitary extract and eserine, and these latter are usually no more valliant than the first.

Then is when the surf changes, as it were, and the surgeon and internist change to surgery as the only hope, and you see the operating room gotten ready, and staff rapidly assembled; the patient, in a great many cases, too weak to need much anæsthesia, is opened up. One of several conditions may be present: a paresis from too long distention of bowel, or ileus in which possiby a stomach lavage with rest of that organ would have been of more avail; an intussusception, a volvulus, an obstructive appendicitis, a gallstone obstructing the bowel, a malignant bowel, an embolism of the mesentery, a gauze pad, a drainage tube, occlusion of gut, or one of many other conditions. If a tentative diagnosis of a surgical condition had been made earlier, and so much needless, useless and harmful medication had not been given, and so many needless, worrying and unnecessary measures used, and prompt surgical intervention instituted, it would have been much better for patient, family and friends, as well as the doctors.

It must be admitted, however, that there are always two sides to this, as to any other question, and non-operative treatment will always have its advocates and, in a great many cases, it will have to be treated non-operative. This treatment should consist of morphine, enema, no purgative, no food, washing stomach and colon; these measures should be used only long enough to satisfy the physician or surgeon that they are of no avail and, before too much time is wasted, and the patient too much weakened and too much damage has been done, we should open the abdomen and empty the distended bowel, relieve the obstruction and treat the strangulated intestine.

Prompt surgical treatment is that which is essential for intestinal obstruction; the more acute the obstruction, the more urgent the operation. Today, one should not labor this point. It should not be accepted only by surgeons, but by the whole profession, yet its acceptance is a matter, in too many instances, of

too much time. There should never be unnecessary delay after the diagnosis has been made.

Traumatic ileus has been, and is, the one condition that makes me never feel like telling a patient, family and friends, "There is no danger," when the query is put, "Doctor, is there any danger in the operation proposed?" For sometimes, with a condition which seems as though there would be no trouble, especially in a neurotic patient, operation will be followed by nausea, vomiting, restlessness, sleeplessness, constipation and bad facies, which immediately get the surgeon worried. He will begin to wonder what has happened, what is the deed of omission, or commission, and then will start the role of medicinal remedies, finally winding up, as Deaver puts it, in opening up the Pandora box of troubles which, too many times, gives no clue to the cause, and many more times, gives no relief. On account of delay this condition, in my experience, comes when least expected and has no connection with bad cases in which we might easily have expected trouble of any kind. So, as I see and take it, this is an ileus, non-obstructive in type and similar in nature to an acute dilatation of the stomach.

In my hands, this condition has been encountered more with the nervous individuals, the ones who have worried over their condition, and the final outcome, at times saying to the family and me, they "never expected to survive the operation", than it has ever occurred in those cases of severe conditions, both before and following operation, in which I might have thought I would have almost any disaster.

In my opinion, the one great causative factor in ileus is the abdominal drain and, in my opinion, other than for its use in acute, fulminating appendicitis, or where the bowel is punctured, or where intra-abdominal hemorrahage cannot be checked, other than gauze pack, gall duct, or gall-bladder surgery, it has no place in the abdomen other than to cause morbidity or mortality.

Next, in point of importance as a causative factor of ileus, is the preoperative purge; and next is the prone position following operation; the patient who has the least preoperative purgation and is turned from side to side and out of bed in from two to four days is the one who has less trouble following operation, during convalescence and always thereafter.

Conclusions.

The following minimize that bugbear to surgeons, post-operative adhesions and ileus:—

1. Less preoperative purgation;

The least retraction of wound and handling possible of abdominal vescera;

Less drainage used;

Less prone position;

Getting patient up early.

2. Reflex inhibition, toxic paresis and the mechanical effect of meteorism and kinking are variable factors, often all combining to cause obstruction, and it is well for the surgeon not to be too much influenced by the dynamic as opposed to the mechanical causes for such obstruction, as sometimes, quite in the late stages, when it might seem all hope by any means would be futile, life may yet be saved by giving mechanical relief and so enabling nature's powers to deal with the toxemia.

3. Over-distention of bowel causes paralysis. This is an important condition since it enters into so many cases of obstruction. Until a local meteorism develops, the prospect for surgical treatment is generally favorable, but when once a general meteorism is established, all cases are dangerous, and if distention continues long, the paralysis will not be relieved. At the same time, it must be remembered that distention paralysis is of a temporary nature and usually disappears at once, if the bowel is emptied.

4. In any case, seemingly passing the stage of pseudoileus, be it dynamic or obstructive in character, do not procrastinate until the patient is too toxic and too weak to withstand opening up the abdomen, and see and do what is best under the circumstances for the individual case; drainage in the hopeless meteoric and paralytic cases will do no harm and, in the cases of mechanical obstructive type, it is the only chance for a recovery and should never be denied anyone.

5. There are two conditions which may be present in any case of obstruction when it comes under observation and which, if present, should receive immediate surgical attention,—collapse and fecal vomiting. We can be

well assured that if strangulation is released, an intussusception is reduced, or a volvulus untwisted before the tissues have been hopelessly damaged, the patient will have uneventful recovery. It is only when an improper delay has been allowed that danger is encountered.

THE PUBLIC AND ITS MEDICAL SOCIETY.*

By D. L. HARRELL, M. D., Suffolk, Va.

I would indeed be glad if I could convey in words my kind feeling and high appreciation for the honor you conferred on me at your last meeting. The presidency of a real, alive, active, progressive society as this, where harmony and co-operation prevail, carries with it an honor that any physician would justly be proud of, and I assure you that my gratitude will be expressed in clean and untiring efforts to do everything possible for the advance and uplift of the society's interest.

Feeling that there is a weak link between the medical profession and the public, I will speak briefly with reference to the "Public and its Medical Society."

Throughout the past ages, and even more today, medical science has held, and now holds, a prominent place in the estimation of mankind, and justly so, because it was ordained by God. "Inasmuch as ye have done it unto one of the least of these, my brethren, ye have done it unto me". It seems that no vocation in life is more worthy and carries a higher seal of our Creator's approval, than that of the doctor who devotes life unreservedly to administering unto the sick, the wounded, the careworn, the feeble, the maimed, the blind and to whatever type, kind, and manner of physical ill the body is subject, save one, and that is the vocation of those who minister to the spiritual man. Many times the doctor, the nurse, and all others who are a part of this force in life can, and do, dominate and influence that is commendable unto our Maker. So the Southside Virginia Medical Society is with you, without a feeling of apology. It possesses a sense of security and confidence, because its principles are based upon a foundation stronger than Gibraltar. You may ask what has a Medical Society to do with this or any other community? What is it worth to me? Listen—this is where we meet to renew our friendship and to know each other better; where the two-edged sword of envy, hatred, animosity, contempt and self satisfaction is blunted. Yes! annihilated.

Medical men are human and are subject to some of the many objectionable traits and characteristics that possess the human race. So we come in close contact with each other, and the result is, the good, high and holy that we possess stand out and crowd out the little, measly, contemptible things that demoralize and destroy the efficiency of one and all. We unite our efforts as one, harmoniously and sincerely, to study and discuss the great questions that confront us as preventors and healers of disease,—how to prevent and cure tuberculosis, smallpox, typhoid fever, and every other condition that comes to you to claim your loved ones through invalidism, old age, or death prematurely. Surely, the motive that prompts such high and commendable service is above self. Its for *you* and *your* off spring, for the common good of mankind—wherever and whoever he may be. If this be true, the medical profession and the Medical Society, which is the organization that combines our efforts into one, is no small factor in your community for the common good of all, for your good individually. These are basic facts and principles that must represent and support the progress of your community, which progress is absolutely dependent on your co-operation. The society is the crucible in which the dross, the worthless ideas and opinions are destroyed; it is the sieve that retains for your use and benefaction the things that are worth while. If you are to derive and enjoy what is provided for you, you must co-operate with us with an equal sincerity and honesty of purpose. Many times this may be difficult to do, because the laity can not understand all about electricity or life. Why does the acorn planted in suitable soil make the sturdy oak? I can't give the reason, neither can you—so it is necessary at times for the public to accept certain definite, basic principles, established by the medical science, when we are unable to explain in words, in five minutes' time, what it has taken us a life time to learn. Sanitation and quarantine are momentous questions. They have made wonderful progress year by year

* President's address before the Southside Virginia Medical Association, December 1919.

until the states finally created the various boards of health as a result of what was done by the medical profession in the societies. No doubt too little consideration has been given to public meetings, such as this, giving the laity privilege to become educated up to seeing the facts and reasons for more and more rigid laws, and to become more familiar with the prevention of diseases. The assets of any community, state or nation, must be dependent upon the enforcement of its laws of sanitation, quarantine and whatever contributes to the health and life of its constituents, and yet it is amazing how bitterly these things are sometimes fought.

When your health officer calls and orders a pool of stagnant water on your premises abolished, or the tin cans in the back yard that contain stagnant water removed, don't raise objection and require argument equal to a post-graduate course in hygiene and sanitation. No health officer or law is "putting one over on you" when such demands are made. The stagnant pool of water may possibly be the starting point for a severe epidemic of typhoid fever and, if it does, it is sure to tax some to the full limit, financially, physically, mentally, and finally, to destroy the life of many good citizens and loved ones. The mosquitos that breed in an innocent can of water will not only annoy you, when you stop for a rest, but the very kind that carry the malarial germs from one person to another may be thriving there to make you and yours totally unfit for duty and pleasure. Having served as health officer for several years, I have some knowledge of how the laity, a few years ago, regarded orders from such authority. Many times when a man's privilege or purse was affected, the lash of the law alone could affect a reasonable response to the demands of the law. Selfishness and defiance seemed to overcome the conscience.

For instance, your eighteen year old daughter is suddenly taken sick in the night, she is nauseated, and has some diarrhoea with moderate abdominal pain. The doctor is called. By the time he arrives, faint and mild nervous symptoms develop, with some fever. During his visit he notices a tendency to stupor out of proportion to all other symptoms and he questions along every line to find a clue leading to the dagnosis, but he gets nothing definite. The doctor leaves to return in two hours, and he now finds a condition that alarms him, because of the stupor, and profound nervous symptoms. A thorough examination fails to show any eruption on body or sore throat: no definite meningeal symptoms. This case has not had sufficient time to develop so the attending physician can't say really what the disease is but, deep down in his soul, he is thinking of malignant scarlet fever, and calls the health officer in consultation. They decide it is best to quarantine as a safety precaution, and many people in such a measure, will raise a most emphatic objection to the quarantine because the daughter has simply eaten a little something that has made her feverish and a little delirious. So there follows a heated argument and all the family and both the doctors get mad, and the devil that's in both simply runs riot. The quarantine is established, so far as the law is concerned. They change doctors, and within eighteen or twenty hours the patient is dead, and no one knows what caused the death. Four days later a younger child is taken suddenly ill, in the same way, and the case pursues a similar course, and has only a suspicion of eruption, with a thoroughly red throat, but dies before a definite diagnosis is made. The third child falls sick, has a mild type of the disease and develops all the symptoms in a manner that is satisfying to all, even the family that malignant scarlet fever is the diagnosis. Two deaths in one family in six days mellows a highly tempered soul and brings one to reason. By this time, the family that did everything possible towards discounting and preventing the quarantine, would do everything to prevent any other person from having this deadly type of scarlet fever. A few of the neighbors, who were also loud and bold in their condemnation of the quarantine, and the doctors who instigated it, who also slipped in by the law and wilfully carried the deadly poison to their own loved ones, would give the world if they could command it, for the privilege of following the precautionary measures that were justly provided. Such an attitude is malicious and is a stench in the nostrils of civilized mankind, and I believe that the transmission of disease and death in such circumstances will be looked upon by "Our Maker" with the same scrutiny and justice as the fellow who commits murder. If a mistake must be made for the good of humanity, make

it in favor of what is best and just to your fellow man.

Turn the page and let us consider another type of case. Your child comes from school and hands you a small slip of paper, stating that the physician provided by the state has examined the throats of the pupils and found that Mary has diseased tonsils and advised you to see your physician regarding treatment. Not knowing how very important this matter is, you delay and delay. Finally, the doctor is consulted at a time he has an emergency call, but takes enough time to look in the mouth and does not examine the throat. Perhaps Mary does not want any doctor looking down her throat any way, so the child gets a prescription and the parent may or may not ask about having the tonsils removed. That makes little difference, because the doctor is not going to refer any child to a specialist for removal of tonsils until he knows the tonsils are diseased or apparently so. His advice could only be to wait. The patient waits, and from time to time has attacks of tonsillitis, finally a severe attack. Later Mary looks badly, the complexion is sallow, appetite is disturbed, she is languid, pains develop in joints. These grow in severity and are followed by redness and swelling. Dr. X. is called, and the case is readily diagnosed as inflammatory rheumatism. This diagnosis satisfies the family, neighbors and friends because everybody knows the doctor is treating the child for the right disease. Finally, the pain, swelling and redness disappear and Mary returns to school, but never looks and seems quite well. Later, mother sees that Mary can't play like the other children; she has shortness of breath on exertion, her feet and legs are swollen, she looks badly, and this time doctor A, who has recently had a serious experience in a similar case is called. He immediately begins to question the family about every illness Mary ever had and he is told of the small slip of paper from the teacher, of the consultation with doctor number 1, of the rheumatism treatment by doctor X, and, on examination, he finds that dear little Mary has heart disease, the type that destroys the valves. In spite of all the doctors and treatment known, Mary grows rapidly worse, until she answers the call that mother and father cannot answer for her. This is indeed a sad but true picture, and it is more sad, when you know as recent medicine knows, that Mary should not have died, should not have had rheumatism, should not have been sick at all, save from the trivial effects of having her tonsils removed when the little slip of paper was received from the teacher.

The first case cited, placed the responsibility on the family; not so in this case, because if modern medical teaching and belief is true, the doctors 1 and X must answer before the same scrutinizing and just God. It is not necessary to continue citing cases, for I believe you can see *your* medical society has a duty to perform, that it owes you something, and that *we* must open new avenues and methods of imparting to you such information as will help you to prevent many of the incurable diseases that are day after day claiming the flower of the land. You should know that nearly all tonsils that look rather large after 10 or 15 years of age, are diseased and should be removed, that every person who has had one attack of appendicitis should have the appendix removed, that every abscessed tooth should be removed, that pus, wherever found in a human being, should be elminated so as to prevent rheumatism, organic heart disease, Bright's disease, high blood pressure and many other incurable conditions, to say nothing of indigestion, neuralgia, etc. But few problems confront the American people today that are more significant or important than those of teaching people how to keep well, and a public session devoted to educational training at each meeting of the Southside, appeals to me as one good way to continue what is already being done. Let us be truly American, not only geographically, but live it as individuals.

RENAL LITHIASIS.*

By A. I. DODSON, M. D., Richmond Va.
Associate Surgeon and Urologist, St. Elizabeth's Hospital.

Renal calculi occupy probably the most prominent place in urological surgery, not only because of the great distress caused the patient, but also because by modern methods of diagnosis and treatment the surgeon is usually able to relieve the condition promptly and with minimum danger. The first renal calculus was removed from the living subject in 1880 by Henry Morris, of England. In 1896 McIntyre, of Glasgow, first demonstrated stones in the

*Read before the Richmond Urological Society, June 1920.

kidney by radiograph. The progress of radiographic technic, aided by the cystoscope, urine analyses and tests of renal function, has placed the diagnosis on an almost definite basis, while modern surgical technic insures a minimum risk.

The mode of calculus formation has been widely discussed and many possible reasons have been given. Sir Wm. Osler believed calculi to be produced by an excess of a sparingly soluble ingredient such as cystin or xanthin, but more frequently by the presence of uric acid in a highly acid urine which favors its deposition. He further called attention to the suggestion of Ord that albumin, mucus, blood and epithelial shreds may be the starting point of stone. Ebstein was of the same opinion, thinking that the organic or albuminous supporting frame work found in calculi was the deposit on which crystallization took place, and that without a nucleus of organic materials no stone formation would occur. The application of new layers of crystals is thought to occur in a similar manner to rock candy crystallizing on a string. This, of course, involves the idea of an over-saturation of the urine with a crystallizable substance or some change causing it to be unable to hold the normal amount in solution.

Urine contains in addition to crystalloidal substances certain colloids, including under normal condition, especially the pigments, and under pathological conditions, such products of inflammation as fibrin. Colloidal substances are held in very fine suspension and therefore present an enormous surface area. The crystalloids which are in true solution are believed by Schade to be absorbed to some extent by the colloid surface, resulting in a zone of concentration around each particle. When the crystalloid goes out of solution it will, of course, carry colloids with it; hence, the frame work found in urinary concretions. Urinary calculi are not simple conglomerations of crystals. If they were, we would be able to dissolve them by merely changing the reaction of the urine according to the nature of the calculus, for crystallization is a reversible process.

Some colloids are also reversible, precipitating in acid and dissolving in alkaline media; but this is not true of fibrin. Schade was able to produce with calcium salts and fibrinogen masses of salts having the same structural arrangement as calculi. He, therefore, believes that some inflammatory exudation takes part in their formation.

The presence of some definite predisposing factor is evident by the rather large percentage of recurrence noted. Cabot reports a series of 66 operations with 47 per cent. recurrences, while 88 re-examinations at the Mayo Clinic revealed 14.7 per cent. of reformation, most frequently at the site of the previous stone.

The most typical clinical evidence of stone is an attack of severe pain, sudden in onset, radiating from the kidney region downward along the urinary tract into the leg or genitalia. When this symptom is accompanied by hematuria, usually only the X-ray is required to complete the diagnosis and point out the exact location of the stone. Such attacks only occur when the stone has reached the ureter or blocked the pelvis; therefore, much less prominent symptoms, as slight dull pain in the back, increased by exercise, lumbar tenderness, and albuminuria, should lead us to make a thorough X-ray and cystoscopic examination. Even a very large and destructive calculus may be present with no symptoms other than a small amount of albumin in the urine, and may only be found at autopsy.

In the diagnosis of stone, all the ills of the kidney and many of other organs have to be considered. Oxaluria may be the cause of both hematuria and radiating pain and confusion has arisen between the passage of gall stones and renal calculi. Spondylitis often causes severe lumbar pain and frequently radiating pain which may be confused with that due to the passage of stone. Renal infarcts, hematogenous infection of the kidney and pyonephritis will give symptoms strongly suggestive of stone. Seminal vesiculitis will frequently cause reflex pain in the region of the kidney with blood in the urine from congestion of the trigone and posterior urethra. The appendix may also be a source of confusion. When it is acutely inflamed and adherent to the bladder, causing urgency and frequency of urination, it greatly resembles a renal attack. On the other hand, attacks of kidney colic may be accompanied by abdominal pain

and flatulence directing attention to the intestinal tract.

Before attempting any operations, it is highly desirable not only to determine the presence of stone, but also its location. The X-ray gives the most positive evidence and has contributed more than any other one thing to the differentiation of nephrolithiasis from other diseases of the kidney and adjacent structures. Operation on roentgenographic evidence alone, however, is not good surgery. The surgeon should know the functional capacity of each kidney, which is only possible by cystoscopy. The pyelogram, also made possible by the cystoscope, is of great value in determining the location of a stone and it defines the location of the kidney. Dr. William J. Mayo reports two cases in which the right kidney was exposed when the shadow was caused by gall stones.

In the treatment we must choose between nephrolithectomy, nephrectomy, and watchful waiting. Removal of the stone with drainage of the kidney pelvis when infected is the operation of choice. Frequently large branching stones, multiple stones, or infection cause such destruction of the kidney that nephrectomy is advisable. If a very small stone in the pelvis is not causing a great deal of discomfort, delay is justifiable in the hope that it will be passed. Operation might also be deferred when a small stone fixed in the cortex gives no symptoms nor disturbance of function, because of the possible mutilation incident to its removal.

In bilateral calculi, when there is good renal function and the patient is otherwise in good condition, both kidneys may be operated upon at one time. When this is not advisable and there is more pain, hemorrhage, or toxic absorption from infection in one kidney, it should be attacked first. Otherwise, it is considered advisable to operate first upon the kidney having the greatest function. When this is done, frequently a moderately impaired organ will so regain its function that its diseased fellow may be operated upon and removed if advisable.

Any stone in the kidney probably will cause trouble sooner or later, as it predisposes the kidney to infection and loss of function, in addition to the destruction caused by its growth. Braasch noted nephrolithiasis to be third in order of the five most common causes of perinephritic abscess.

Early operation will prevent much kidney destruction as well as much suffering and general physical disability, while the present high standard of technic insures almost a negligible mortality. The Mayos report 484 consecutive operations, with 6 deaths.

The following case operated upon at St. Elizabeth's Hospital recently presents several points of interest:

Mrs. J. N. H. entered St. Elizabeth's Hospital, January 15, 1920, complaining of pain in the right side. For the past four years she had noticed occasional slight pains in the lumbar region and, at times, a little pain and frequency of urination. For several months she had gotten up once at night to void.

Her present illness began about a month prior to her admittance to the Hospital, with pain in the right lumbar region relieved by lying down. During the week previous to her admission she had three rather severe attacks with pain radiating down to the right groin. On admission she complained of considerable tenderness in the right lumbar region and right

Figure 1

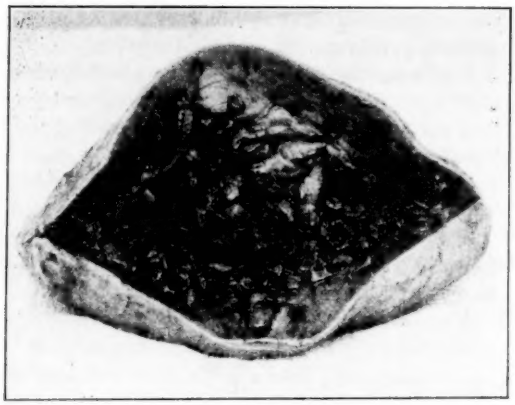


Figure 2

lower quadrant of the abdomen. Her temperature was 100.2, and she looked quite sick. There was a globular mass in the pelvis extending almost to the umbilicus, a four months pregnancy. Otherwise, physical examination was negative. Her blood urea nitrogen was 16 mg. per 100 c.cs. and phenolsulphonephthalein was eliminated, 30 per cent. the first hour and 12 per cent. the second.

Cystoscopic examination showed the base of the bladder to be very much inflamed and the right ureteral orifice œdematous, the left, normal. Two c.cs. of 0.4 per cent. indigo-carmin solution was given intravenously and its appearance noted. The dye was eliminated by the left kidney in 8 minutes. There was no elimination seen from the right at the end of an hour.

The right kidney pelvis was irrigated with 1 per cent. mercurochrome solution and it was interesting to note that the patient's temperature returned to normal within 12 hours and remained so throughout her stay in the Hospital.

Roentgenographic examination, January 17th, showed multiple stones in the region of the pelvis of the right kidney. (Fig. 1).

On January 21st, she was operated upon and her right kidney removed by Dr. J. S. Horsley. The specimen consisted of the kidney, whose pelvis and calyces were markedly dilated and filled with stones varying in size from that of a millet seed to a half-inch in diameter. (Fig. 2).

She left the Hospital February 17th in excellent condition and gave birth to a healthy baby a few months later. Her health has continued to improve.

This case not only illustrates the fact that a large number of stones may be present for a considerable time and cause very few symptoms, but it also shows that nephrectomy may be done during pregnancy with safety to both mother and child when the remaining kidney is known to be healthy.

The Truth About Medicine

During October the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

The Seydel Manufacturing Co.;
Betanaphthol Benzoate
Benzyl Alcohol
Mercury (Mercuric) Benzoate
The Abbott Laboratories:
Acriflavine and Proflavine.

NEW AND NONOFFICIAL REMEDIES.

Ichthynat.—An aqueous solution, the important medicinal constituents of which are ammonium compounds containing sulphur in the form of sulphonates, sulphones and sulphides. These characteristic forms of sulphur result from the sulphonation of the tarlike distillate obtained from certain bituminous shales. For the actions and uses of ichthynat see the general article on Sulphoichthyolate Preparations and Substitutes, New and Nonofficial Remedies, 1920, page 318. The Heyden Chemical Works, New York City. (Jour. A. M. A., Oct. 2, 1920, page 939.)

Proganol.—A compound of silver and albumose, containing not less than 8.3 per cent. of silver in organic combination. For the actions and uses of proganol, see general article on silver preparations, New and Nonofficial Remedies, 1920, page 306. From 0.25 to 1 per cent. solutions are used in acute gonorrhea, and 5 to 10 per cent. instillations in chronic cases. In cystitis and urethritis from 1:1,000 to 1:2,000 solutions are used as irrigations. Used also in forms of bougies and tampons (5 to 10 per cent).

Twenty per cent. Aromatized Suspension made from Benzyl Benzoate, Van Dyk and Co.—A mixture, each 100 Cc. containing benzyl benzoate for therapeutic use (Van Dyk and Co.), 20.32 Gm.; acacia, 8.0 Gm.; olive oil, 5.00 Gm.; sugar, 12.00 Gm.; flavors and water, to make 100 Cc. For actions of uses of benzyl benzoate, see New and Nonofficial Remedies, 1920, page 49. United Synthetic Chemical Corporation, New York (Jour. A. M. A., Oct. 16, 1920, page 1069).

Acriflavine-Abbott.—A brand of acriflavine (see New and Nonofficial Remedies, 1920, page 20) complying with the N. N. R. standards. The Abbott Laboratories, Chicago.

Proflavine-Abbott.—A brand of proflavine (see New and Nonofficial Remedies, 1920, page 21) complying with the N. N. R. standards. The Abbott Laboratories, Chicago.

Betanaphthol Benzoate-Seydel.—A brand of betanaphtol benzoate (see New and Nonofficial Remedies, 1920, page 189) complying with the N. N. R. standards. Seydel Manufacturing Co., Jersey City, N. J.

Benzyl Alcohol-Seydel.—A brand of benzyl alcohol (see New and Nonofficial Remedies, 1920, page 27) complying with the N. N. R. standards. Seydel Manufacturing Co., Jersey City, N. J. (Jour. A. M. A., Oct. 30, 1920, page 1205).

PROPAGANDA FOR REFORM.

More Misbranded Venereal Nostrums.—The following preparations have been subject of prosecution by the federal authorities charged with the enforcement of the Food and Drugs Act, on the ground that the therapeutic claims made for them were false and fraudulent: Injection Malydor (The Williams Mfg. Co., Cleveland, Ohio), essentially a dilute watery solution of boric acid, phenol, a zinc salt, glycerin, acetanilid and unidentified plant material G Zit (The Stearns Hollinshead Co., Inc., Portland, Oregon), bougies consisting essentially of cacao butter and a silver compound. G Zit Antiseptics (The Stearns Hollinshead Co., Portland, Oregon), composed essentially of oils of copaiba and cubebs, and a compound of sulphur. Hinkle capsules (Hinkle Capsule Co., Mayfield, Ky.), consisting essentially of powdered cubebs, copaiba and cannabis indica. Tisit-Pearls (S. Pfeiffer Mfg. Co., East St. Louis, Ill.), consisting essentially of a mixture of oil of sandalwood, balsam of copaiba, oil of cinnamon and a fixed oil. Tisit (S. Pfeiffer Mfg. Co., East St. Louis, Ill), a watery solution of zinc sulphate, thymol, alum and glycerin. Black-Caps (Safety Remedy Co., Canton, Ohio), consisting essentially of copaiba, cubebs and saw palmetto. Hexagon (Montebello Laboratories, Kansas City) an injection consisting essentially of a watery solution of zinc sulphocarbolate, boroglyceride and bismuth subnitrate and capsules containing hexamethylenamin. Hyatt's A. B. Balsam (C. N. Crittendon Co., New York City), consisting essentially of potassium iodid, alum, Epsom salt, plant extractives and unidentified alkaloids, sugar, glycerin and alcohol. DuQuoin's Compound Santal Pearls (Wm. R. Warner and Co., Inc., New York City), consisting essentially of a mixture of santal oil and copaiba. (Jour. A. M. A., Oct. 2, 1920, page 954).

More Misbranded Venereal Nostrums.—The following preparations have been the subject or prosecution by the federal authorities under the Food and Drugs Act, chiefly because the therapeutic claims made for them are false and fraudulent. Injection Zip (The Baker-Levy Chemical Co.), consisting essentially of acetates and sulphates of zinc and lead, opium, berberin, plant extractives, alcohol and water. Three Days Cure ("3 Days" Cure Co.), consisting essentially of zinc sulphate, boric acid and water. Redsules (H. Planten and Son), consisting essentially of oil of santal, copaiba and methyl salicylate. Blakes Capsules (Henry K. Wampole and Co.), consisting essentially a tablet of salol suspended in a mixture of volatile oils, oleoresins and plant extractives, including copaiba and cubebs. Compound Extract of Cubebs with Copaiba (The Tarrant Co.), consisting essentially of cubebs, copaiba and magnesium oxid. Santal Midy Capsules (E. Fougera and Co.), containing essentially oil of santal (Jour. A. M. A., Oct. 9, 1920, page 1016).

The Bethlehem Laboratories Explain.—The president of the General Laboratories, who is also vice president of the Bethlehem Laboratories, explains that the Bethlehem Laboratories is the sales and distribution organization for hyclorite, which is manufactured by the General Laboratories, and that the offer from the Bethlehem Laboratories to sell to physicians shares in the company was the unauthorized act of an authorized agent. The General Laboratories and the Bethlehem Laboratories recognize the impropriety of soliciting physicians to purchase stock in their concern (Jour. A. M. A., Oct. 9, 1920, page 1016).

Succus Cineraria Maritima.—The medical profession is at present receiving through the mail circulars extolling this nostrum for its alleged virtue in "absorbing" various forms of cataract. In February, 1917, the Bureau of Chemistry of the U. S. Department of Agriculture issued a Notice of Judgment which showed that the government authorities had prosecuted the firm which markets the preparation—The Walker Pharmacal Company—because claims were made on the trade package to the effect that this nostrum was a remedy for cataract and other opacities of the eye. The authorities charged that these claims were false and fraudulent. To this charge the company has pleaded guilty, but these claims are still being made through other avenues to the medical profession (Jour. A. M. A., Oct. 9, 1920, page 1007).

The Use of Arsphenamine And Related Compounds.—Many therapeutic perplexities remain after nearly a decade of trial of the type of compound which Ehrlich introduced. It is well for the practitioner to realize this, especially when expert workers still make an appeal for conservative interpretation. Arsphenamine has apparently made it possible or even probable, but only to the inexperienced has the cure of syphilis been made absolute and inevitable. Even the composition of arsphenamine and neoarsphenamine is not fully known, and the control of the products by the government is important. It should be borne in mind also that neoarsphenamine behaves differently in the animal organism from arsphenamine, and should not be regarded simply as arsphenamine in a convenient form for administration. The various brands of arsphenamine and neoarsphenamine made in the United States compare favorably as to toxicity with those from abroad (Jour. A. M. A., Oct. 9, 1920, page 1005).

Bran-O-Lax Tablets.—The public is urged to purchase these "Laxative Wheat-Bran Tablets for constipation and indigestion instead of those severe and harmful drugs". The essential claims either interred or expressed, are to the effect that Bran-O-Lax Tablets are wheat bran in condensed form and that they are free from "harmful drugs". It is also claimed that "Bran-O-Lax contains one heaping tablespoonful of plain nutritious wheat bran condensed into tablet form". The A. M. A. Chemical Laboratory reports that Bran-O-Lax Tablets contain wheat bran, reducing sugar (probably glucose) in large amounts, a gummy substance, probably acacia, and about one grain of phenolphthalein per tablet. Whereas a heaping tablespoonful of wheat bran was found to weigh about 166 grains, the total weight of a Bran-O-Lax Tablet was only about 35½ grains (Jour. A. M. A., Oct. 16, 1920, page 1083).

Toxicity of Arsphenamine.—Roth has determined that if an alkalized solution of arsphenamine or a solution of neoarsphenamine is shaken in the presence of air for one minute, the toxicity is increased. He points out that arsphenamine preparations which are soluble with difficulty are likely to be shaken to aid in the solution of the drug with the risk that chemical reaction may occur (Jour. A. M. A., Oct. 16, 1920, page 1072).

Chaulmoogra Oil In Leprosy.—Continued trials made at the leprosy investigation station of the U. S. Public Health Service and the Kalihi Hospital at Hawaii seem to justify more than ever the statement that chaulmoogra oil contains one or more agents that exert a marked therapeutic action in many cases of leprosy. The intramuscular injection of the soluble ethyl esters of the fatty acids from chaulmoogra oil usually leads to a rapid improvement in the clinical symptoms of leprosy. The ethyl esters of iodin addition compounds of the unsaturated fatty acids in chaulmoogra oil have also been used. There is no experimental proof that this addition of idoin causes any increase in the effectiveness of the material used (Jour A. M. A., Oct. 16, 1920, page 1071).

Fake Orange Beverages.—The orange and other citrus fruits possess value other than that which can be measured by flavor or fuel value. They are relied on as antiscorbutic by a large number of persons in the preparation of food mixtures which for some reason are deficient in this protective element. Oranges merit additional favor because they are relatively rich in the water-soluble vitamin B, sometimes designated antineuritic vitamin, which promotes well-being in as yet an undetermined way. In view of these facts, the chemists of the U. S. Public Health Service have done well in their timely warning against the "fake" orange beverages that have come to their attention. They report that in most cases the fraudulent products consisted of carbonated water, flavored with a little oil from the peel of the orange and artificially colored to imitate orange juice (Jour. A. M. A., Oct. 16, 1920, page 1073).

Vaccines in Toxic Conditions.—Under this title an article purporting to be a scientific contribution appears in the original department of the Illinois Medical Journal. The apparent purpose of the article is to overcome any hesitancy on the part of practitioners to use vaccines in toxic infectious conditions for fear that they might thereby cause harm. The theory propounded is contrary to those who have studied the subject. The man who writes the article, G. H. Sherman, is in the business of making and selling vaccines, though this is not made evident in the article (Jour. A. M. A., Oct. 23, 1920, page 1140).

More Misbranded Products.—The following products have been the subject of prosecution by the federal authorities: Salubrin (Salubrin Laboratories, Grand Crossing, Chicago) was held to be misbranded because the therapeutic claims made for it were false and fraudulent. Dolomol-Calomel and Dolomol Iodoform (Pulvola Chemical Co., Jersey City, N. J.) were held to be adulterated and misbranded because they did not have the composition claimed. Influenza Special (Senoret) (Senoret Chemical Co., St. Louis) was misbranded because the therapeutic claims made for it were false and fraudulent. Gray's Ointment (Dr. W. F. Gray and Co., Nashville, Tenn.) was misbranded because the therapeutic claims were false and fraudulent. Vegetable Blood Purifier (Gibson-Howell Co., Jersey City, N. J.), was held misbranded on the ground that the therapeutic claims were false and fraudulent. Renovine (Van Vleet-Mansfield Drug Co., Memphis, Tenn.), was held to be misbranded because the therapeutic claims were false and fraudulent. Cin-Ko-Na and Iron (De Lacy Chemical Co., St. Louis) was declared misbranded because the curative claims were false and fraudulent. Craig Healing Spring Mineral Water (Craig Healing Springs Hotel, New Castle Va.), was held to be misbranded because the therapeutic claims were false and fraudulent. Laxa-Cura Water (Laxa-Cura Water Co.) was held to be adulterated and misbranded because it consisted in part of a filthy and decomposed putrid animal and vegetable substance, and because the alleged analysis was incorrect and because the curative claims were false. Reuter's Little Pills for the Liver (Barclay and Co., New York) were held misbranded because the curative claims were false and fraudulent (Jour. A. M. A., Oct. 23, 1920, page 1150).

Tannin Compounds Used as Intestinal Astringents.—On account of the irritant action of tannic acid on the stomach, a number of tannic acid compounds have been introduced which are assumed to pass the stomach practically unchanged but are broken up in the intestines with liberation of the tannic acid. Working in the A. M. A. Chemical Laboratory, P. N. Leech has made a study of the tannin compounds described in New and Nonofficial Remedies, and also of some recently introduced American products, to determine whether they are largeley unchanged by action of gastric juice, and if so, whether they are capable of decomposition by the intestinal juice. For this purpose he determined the solubility of each compound in water and hydrochloric acid solution, acid and pepsin solution, and sodium bicarbonate and pancreatic extract solution. Only one type of tannic acid compounds studied completely resists the action of the gastric juice and is broken down in the intestine according to theory, i. e., the diacetyl tannin acid compound acetannin. Tannigen is fairly satisfactory, but the market supply is not of reliable composition. Protan and tannoform are both readily soluble in sodium bicarbonate mediums, but they are probably not broken up to a great extent in the intestine. Of the tannin albuminates, Albutannin-Calco and Albutannin-M. C. W. are not nearly so resistant to the acid-pepsin digestion as tannalbin and tannin albuminate exsiccated. Both tannalbin and tannin albuminate exsiccated (the latter now sold as Albutannin-Merck) are not particularly resistant to the acid-pepsin medium, but they do liberate free tannic acid in the alkaline-pancreatic medium (Jour. A. M. A., Oct. 23, 1920, page 1120).

Capsules Folia—Digitalis—Upsher Smith and Tincture of Digitalis Upsher Smith.—The Council of Pharmacy and Chemistry reports that these preparations, advertised and sold by Upsher Smith, St. Paul, Minn., were considered and found to have the status of official articles. For this reason they were not admitted for inclusion in New and Nonofficial Remedies (Jour. A. M. A., Oct. 30, 1920 page 1205).

Supsalvs Not Admitted to N. N. R.—The Council on Pharmacy and Chemistry reports that Supsalvs are advertised by the Anglo-French Drug Co. as "stable suppositories of '606' (of French manufac-

ture)" with the claim that by rectal administration of these suppositories the effects of arsphenamine may be obtained. The Council found Supsalvs inadmissible to New and Nonofficial Remedies, first, because the quality of the medicament contained in the suppositories has not been established and, second, because the claimed efficacy of this preparation as a means of securing the effects of arsphenamine lacks substantiating proof. In its report the Council quotes from L. W. Harrison on "The Treatment Of Syphilis", from Schamberg and Hirschler on "A Safe and Efficient Intensive Method of Treating Syphilis", and from the report of the special committee on the manufacture, biological history and clinical administration of salvarsan and other substances of The British National Insurance Medical Health Research Committee, to show that the general opinion of experienced workers is to the effect that the rectal method of administering arsphenamine is ineffective (Jour. A. M. A., Oct. 30, 1920, page 1219.)

Correspondence

Should Chiropractors be Admitted to Practice in Virginia Without Certificates?

Roanoke, Va., December 3, 1920.

To the Editor:—

It may not be generally known by those whose attention has not been dire ted to the matter, that as a near cut to medicine, Chiropractors have been very active with their propaganda throughout the country during the past year. As an instance, it is stated that in Illinois, until enjoined by the courts, they maintained an organization with an insurance feature through which the fines of those convicted were paid, the convicted party continuing practice.

Until quite recently, the number practicing in Virginia has been limited to those who where established previous to 1913 and who were permitted to continue practice by an act of the legislature, no provision being made for future admissions.

As a part of a general drive for recognition, within the past few months, the cult seems to have centered its energies upon Virginia and their method of propaganda has all the earmarks of being directed from some central source and is being worked in season and out of season. Their methods are shrewdly devised in that they have adopted the tried out plan of liberal advertising in the newspapers after the manner of Patent Medicine concerns and, in addition, have also, in some localities, adopted the course of house to house distribution of literature making all sorts of extravagant claims relative to the cure of disease without diagnosis and without other treatment than the "adjustment" of the spine, thereby endeavoring to evade the law.

An important part of their plan of procedure is to so word their advertising matter as to make all prosecutions appear as perse.utions instigated by the medical profession, and their success along this line was attended by the acquittal by jury of one brought to trial at Danville last month. This was accomplished despite the fact that the Judge instructed the Jury that the defendent was practising in violation of the statute.

The purpose of this communication is both to call attention of the profession of the state to the menace as set forth, and to the fact that while the law makes it obligatory upon the Examining Board to prosecute violations of the Medical Practice Act, no fund is provided for such prosecutions. Although it devolves upon the Commonwealth's Attorneys of the localities in which complaints are made to represent the Board, as a matter of fact these officers have such a mass of detail continually before them in their routine work, no matter how willing, they can rarely find time to sufficiently acquaint themselves with the Medical Practice Act and the various rulings bearing upon it to bring such cases to a successful issue unless able counsel be employed to assist. Taking a general view of the situation, it is very evident that if the propaganda of these people is to be met, prompt and vigorous methods must be adopted and the support of the entire medical profession of the state must be had.

In so far as physicians are concerned, it perhaps makes but little more difference whether this particular cult is allowed to practice in the State, than that the sale of harmful patent medicines be permitted, but it is an entering wedge and, since the enforcement of the law is placed in the hands of the profession, it is obligatory upon it either to enforce such law and protect the public, or to refuse to accept the obligation.

It should perhaps here be stated that in addition to the case just closed in Danville, two Chiropractors have within the past month been convicted and fined in the police court in Roanoke. They have appealed and are continuing advertising and practising. Evidence is also being collected and preparation made for the prosecution of one recently located in Newport News.

In order to prevent these people and similar cults which live mainly by misleading advertising methods from becoming rooted in the state, the Examining Board would appreciate it if the medical organization in any locality in which such illegal practice be attempted report the matter promptly. The Board also confidently relies upon the full report of such organizations in instituting proceedings against such violations of the law.

J. W. Preston, *Sec'y.-Treas.,*
State Board of Medical Examiners.

Public Health

Bacteriological Laboratory of The State Board of Health.

We now have ready for distribution our new Blood Culture outfits. Any physician may obtain these upon request. This outfit consists of a bottle of bile culture medium and the usual blank to be filled out.

The Blood Culture is the best diagnostic test now available for typhoid fever and similar infections. The blood is drawn aseptically from a vein and inoculated directly into the bile media. This is incubated and any organism found is studied and identified. All organisms of the typhoid group will grow under these conditions. About two days are usually necessary to complete this examination, but the trouble is amply repaid by the satisfactory results obtained.

One of the greatest advantages of the Blood Culture is that it is most reliable early in the disease when a diagnosis is of the greatest value. The typhoid bacillus usually leaves the blood before the Widal test becomes positive.

We find that physicians often place too much importance on a single negative specimen. No single negative report should ever be considered as conclusive. This is particularly true of sputum examinations as we not infrequently find the tubercle bacillus present in a case where several previous specimens have been negative.

Aubrey H. Straus,
Bacteriologist of the
State Board of Health.

Secretary's Announcement

Final Call For 1920.

Uncollected dues of the State Society at this time, December 2nd, amount to slightly more than two thousand dollars, this in spite of the fact that bills and notices have been mailed regularly every month at considerable expense. A conservative estimate shows that if all members of the Society paid their dues promptly in January on receipt of the first account rendered, the Society would save not less than four hundred dollars in postage and stationery and would earn about one hundred more in interest on daily balances. Applying the time spent in handling this detail matter towards getting new advertising and maintaining our membership should net the society as much more. In other words it will be worth at least one thousand dollars to the Society if all the members will do as several hundred do—pay their annual assessment in January.

Members owe the Society as follows:

107	members owe	$ 4.00	each	$428.00
41	" "	6.00	"	246.00
40	" "	8.00	"	320.00
31	" "	10.00	"	310.00
22	" "	12.00	"	264.00
18	" "	14.00	"	252.00
4	" "	2.00	"	8.00
2	" "	6.35	"	12.70
6	" "	8.35	"	50.10
3	" "	16.35	"	49.05
2	" "	18.35	"	36.70
6	" "	20.35	"	122.10
1	member owes	10.35	"	10.35
1	" "	16.00	"	16.00
1	" "	17.00	"	17.00
1	" "	22.35	"	22.35
286	members owe			$2,164.35

We are making a strong effort to collect from all of these men before January 1st, 1921, as all members who have not settled their accounts by that date will lose membership in the State Society. Following the practice of the American Medical Association, sight drafts will be drawn on those members who have not paid within a reasonable time after the receipt of the last notices sent out in December. This is an added convenience to those doctors who do not find an opportune moment for writing checks.

If you have not done so please send in your check today—your treasury must have the funds for meeting accounts which are presented to this office with surprising and disconcerting regularity!

Extra Service For Our Members.

Automobile Insurance including Fire, Theft, Property Damage, Public Liability, and Collision at actual cost. The company handling this insurance in Virginia promises its policy holders a saving of thirty per cent. In writing for information, give the name of your car, model, car number, engine number and price paid for it. If instructed in your letter, insurance will be placed on it immediately. We can give you both old line rates and our own. Losses are taken care of immediately on receipt of notice of them.

If stock salesmen offer you stock or securities of any kind refer the matter to this office for investigation. This covers looking up the records in the office of the State Corporation Commission to see if the company and the salesman have complied with the law; if from a banking concern we can get a report from the State Bank Examiner, and the general value of the investment will get the close inspection of one or more experts on investments here. The latter service can be rendered just as well by your local banker. Many good investments are on the market today—we carry advertisements regularly of thoroughly reliable investment concerns in Richmond, Norfolk, and Petersburg. Others will be added in the near future. Why not tie up with them?

If your local telephone company persists in not giving you the kind of service you are paying for, refer the matter to this office. We have the ear of the State Corporation Commission and we can possibly get for you an immediate improvement in service.

G. H. Winfrey, *Secretary-Treasurer.*

Medical Education

The Hospital And The Medical School.

In the end the final test of a medical school is its outcome in the matter of clinicians. The battle may indeed be lost before a shot is fired: a low average of student intelligence and inferior laboratory training will fatally prejudice even excellent clinical opportunities, for they rule out certain essential features of clinical training on a modern basis. A serviceable type of doctor was doubtless once produced under conditions that we now pronounce highly unsatisfactory; again, students defectively trained sometimes meet with success in examination or other tests designed to ascertain the quality of their instruction. It is not necessary to investigate closely the merits of the test in order to refute the argument that it endeavors to sustain. The institutions that seek to establish the non-importance of facilities that they do not possess emphasize strongly the importance of those they do. And with good reason. Before undertaking the responsibility of instruction in chemistry or physics or biology, a competent teacher stipulates that he be provided with this, that, or the other. He is not to be put off with the assurance that some men have successfully mastered the subject without laboratory or tools. Very properly he takes the ground that whatever may be true of individuals, in general boys will be much better trained in a laboratory with the essentials than in a bare room practically without them. It is equally true of clinicians. Doctors have after a fashion been made by experience,— *i. e.*, their patients paid the price: further, some graduates of every feeble clinical school in the country have passed state board examinations or obtained hospital appointments, at times after competitive examinations in which they defeated students from schools more highly favored; it still remains true that to do full duty by the young student of clinical medicine, his teachers need access to acute cases of disease in respectable number and variety: that the school which lacks such medical facilities is in no position to teach modern medicine.

In the matter of laboratories we discovered no slight cause for satisfaction. Within two decades the laboratory movement has gained such momentum that its future, even its immediate future, is in no doubt. A race of laboratory men has been trained and quite widely distributed. They know their place and function; they have educated the college administrator to accept them at their own valuation. Where deficient resources still force a compromise, the apologetic attitude is a sufficient promise of more liberal provision by

Abstracts from The Carnegie Foundation for the Advancement of Teaching. Bulletin Number Four.

and by. On the clinical side the outlook is less reassuring. The profession itself has in large measure still to be educated; the clinical faculty often stands between the university administrator and a sound conception of clinical training. It happens, therefore, not infrequently that a university president will hear with astonishment, if not with resentment, that facilities made up of insecure and disconnected privileges scattered here and there through the hospitals, public and private, of a communit now large, now small, do not satisfy the fundamental requisites of clinical discipline surpervening upon modern laboratory work; or that a surgical clinic is no substitute for a clinic in internal medicine. The regeneration of clinical education is therefore apt to proceed somewhat slowly: the sources from which well trained clinical teachers can be drawn are few; the places in which they can be freely utilized are equally restricted. Students trained in the laboratories on modern lines enter clinical departments still more or less unconverted. The result is at best a half-result, yet upon it progressive amelioration in large measure depends.

Once more a few schools meet the specifications set forth in the preceding chapter. We there urged that the backbone of clinical instruction must be a pedagogically controlled hospital best developed on its medical side. The exact status of the hospital may indeed vary: a proper footing has been obtained now through co-ordinate and co-operative endowment,[1] again through state support in connection with the state university,[2] at times through a really effective affiliation.[3] The crucial points are these: (1) the hospital must be of sufficient size; (2) it must be equipped with teaching and working quarters closely interwoven in organization and conduct with the fundamental laboratories of the medical school: (3) the school faculty must be the sole and entire hospital staff, appointment to which follows automatically after appointment to the corresponding school position; (4) the teaching arrangements to be adopted must be left to the discretion and judgment of the teachers, subject only to such oversight as will protect the welfare of the individual patient.

Size Of A Teaching Hospital.

There is little difference of opinion as to the necessary size of a teaching hospital. Less than two or three hundred beds, in practically continuous occupation, can hardly supply either the number or the variety of cases required. It is held that a hospital of 400 beds will support a medical school of at least 500 students. It is highly important that the instructor should have the material that he needs when he needs it. The material must, moreover, be properly distributed: an abundant clinic in diseases of the eye is no substitute for defects in the departments of internal medicine and obstetrics; seventy-five cases of operated appendicitis do nothing to compensate for the lack of typhoid, pneumonia, or scarlet fever.

The size of the school has, of course, some bearing on the necessary size of the hospital, though the hospital cannot be allowed to shrink in exactly the same ratio as the number of students. Because two hundred beds may be made to suffice for one hundred students, it does not follow that twenty beds suffice for ten students. Twenty-five students require in general the same minimum as one hundred students. On the other hand, it is fair to weigh advantages and disadvantages against each other. A small number of students in a small but still fairly representative and completely controlled university hospital, through whose corridors fresh scientific breezes from the university and medical school laboratories blow, will get a better discipline in the technique of modern medicine than a larger body, loosely supervised in an antiquated city hospital where "students" are eyed askance as interlopers. The defects of the former, due to somewhat circumscribed experience, a hospital year will quickly redeem, for he has, and knows how to use, the tools; the defects of the latter will as a rule never be repaired at all. Such a hospital year is in any event highly desirable. It is to be hoped that a more effective and economical organization of preliminary education and a more intelligent public opinion may presently make its exaction generally feasible.

On the basis of the undergraduate instruction described, opportunities for advanced or

1Johns Hopkins.
2Michigan; Iowa.
3Lakeside Hospital and Western Reserve (Cleveland). The newly endowed Barnes Hospital (St. Louis) will occupy a similar position in reference to Washington University.

graduate instruction must supervene. Such opportunities serve two quite different functions. In the first place, the various specialties must be systematically and thoroughly developed as graduate pursuits, resting on a thorough training and experience in general medicine. The number of these specialties is increasing, as more varied and more effective appliances suggest increased differentiation,—a safe tendency, in the interest of efficiency, provided the discipline required does not infringe upon undergraduate territory. In the next place, to these postgraduate institutions the hard-run intelligent practitioner in smaller towns will at intervals return, in order to be invigorated at the head-waters: he will want to get in touch with recent improvement, to see in a brief period a large variety of interesting material, handled by experts in his own field. To both these purposes, the larger hospitals of our great cities may freely lend themselves. Their abundant wards can be used to excellent advantage, even though they may continue to be governed by their present boards. It is probable that the obstacles to such use will largely disappear as the competitive and commercial exploitation of medical education is itself abandoned. For beyond all doubt, not the least serious of the deplorable consequences that have followed in the wake of mercenary medical education is the limitation of hospital opportunities, due to the rivalry of "faculties" and to the incompetent student body to which, largely because of such antagonisms, the intimacy of the ward privilege would have had to be extended.

Clinical Teaching.

Clinical teaching has had substantially the same history as anatomical teaching. It was first didactic: the student was told what he would find and what he should do when he found it. It was next demonstrative: things were pointed out in the amphitheater or the wards, those who got the front seats seeing them more or less well. Latterly it has become scientific: the student brings his own faculties into play at close range, gathering his own data, making his own construction, proposing his own course, and taking the consequences when the instructor who has worked through exactly the same process calls him to account: the instructor, no longer a fountain pouring forth a full stream of knowledge, nor a showman exhibiting marvelous sights, but by turns an aid or an antagonist in a strenuous contest with disease.

The backbone of the structure is the clinic in internal medicine. This central fact cannot in America be too strongly emphasized. The sufficiency of the school's clinical resources depends at bottom on its medical clinic; the value of its training depends on the systematic thoroughness with which it is in position to use an adequate supply of medical cases. To sample a school on its clinical side, one makes in the first place straight for its medical clinic, seeking to learn the number of patients available for teaching, the variety of conditions which they illustrate, and the hospital regulations in so far, at least, as they determine (1) continuity of service on the part of the teachers of medicine, (2) the closeness with which the student may follow the progress of individual patients, and (3) the access of the student to the clinical laboratory. It matters much less what else a school has by way of clinical opportunity if it has this, though, of course, the school that has it will have whatever else it needs too. The main point is that there is no substitute for a good clinic in internal medicine; the school sampled and found wanting there suffers from a fatal organic lesion. Excellent didactic instruction is no compensation; successful passing of written state board or other examinations is no proof that the school has managed to do without. A large surgical service with amphitheater operations every day in the week, a dispensary crowded with eye, ear, and throat cases,—these are all very well in their way. But one comes back to the medical clinic: that is the really important item. Until practical state board examinations can be trusted to disclose defective school facilities on the clinical side, it is thrice important to scrutinize carefully the situation of every medical school in this respect. For proper provision rests at this moment on the conscientiousness and intelligence of medical educators. Thus far the states have not adopted an examination procedure that will destroy schools not able to do their duty in regard to the medical clinic.

Teaching Dispensary.

The teaching dispensary follows the same lines as the teaching hospital in respect to both organization and equipment, and must be con-

structed with its pedagogical use in view. It consists essentially of a commodious receiving-room, leading from which are separate rooms, sufficiently large, clean, well lighted, each assigned to a separate department. The several rooms are appropriately equipped with instruments, apparatus, etc., and with a recording system which enables the workers to keep track of each patient and to collate readily all cases of the same general character. Each department must have an organized teaching staff; the receiving-room must be in charge of a physician, who will assign patients to the departments to which they severally belong. The clinical laboratory must be at hand so that the necessary microscopical examinations can be made without loss of time.

From the teaching point of view, the hospital and the dispensary differ in certain respects: certain classes of cases do not usually enter the hospital wards at all: minor surgery, trivial medical ailments, numerous afflictions involving eye, ear, nose, throat, skin, etc. Ambulatory patients are also under less satisfactory control: a large proportion never come a second time. The dispensary is therefore excellently adapted to show a large variety of conditions: it is a relatively poor place to watch their development. In the dispensary the student can become expert in initial physical examination; but only the hospital wards enable him to study progress, to observe nature's comment on therapeutic moves. The dispensary corresponds to the "office hour."—so important an item in the physician's early progress: the hospital ward represents the sick-room. Clearly, a huge dispensary does not wholly offset a defective hospital.

Between dispensary and hospital, clinical instruction in the third and fourth years is variously apportioned. But apportioned they must be: for the mingling of third and fourth year students in clinical work is severely reprehensible,—an infallible indication of deficient clinical material, imperfect teaching organization or of both. As for the rest, there can be no fixed rule. Important, mainly, is it that the student be brought into immediate and increasingly responsible contact with the disordered machine.

Let us consider briefly the dispensary. The classes are divided into small rotating sections, each with regular appointments in every one of the dispensary departments. The sections, in charge of separate instructors, should not contain more than ten students apiece—rather fewer would be even better. The student is trained at once to take the patient's history, to make the physical examination, to examine blood, uptum, etc., and on the basis of all the facts thus amassed to make a diagnosis and suggest a course of treatment. The instructor stands by, to correct and to stimulate by question, criticism, or suggestion. Everything is a matter of record, and the student's work is thus part of, in a sense the basis of, the complete dispensary records. In the surgical out-patient department, bandaging, stitching up a wound, administering anesthetics, quickly fall to his lot. Schools favorably located in large cities are able to develop considerable out-patient obstetrical work. Thus the student not only amplifies his experience, but learns to combat the conditions under which he will subsequently be called upon to work. He should, of course, in justice to his charge, be accompanied by an instructor, though in the weaker schools this is by no means always arranged. Even so, however, out-patient obstetrical work, though an experience, is not a discipline: it does not dispense with the necessity of careful training in method under ideal hospital conditions. The young physician will never learn technique and the importance of technique properly except in the maternity hospital; having learned them there, his problem in practice is to secure the essentials even amidst the most unpromising environment. In certain of the specialties—dermatology, ophthalmology—the bulk of the direct instruction received is in the dispensary service. To some extent, of course, the conditions observed in them come under repeated observation in the medical clinics of both third and fourth years; full mastery of a specialty belongs of course to the postgraduate years. But the student must be sufficiently at home to help himself in emergencies and to know when and whence to seek further assistance.

In writing advertisers, please mention this journal.

Proceedings of Societies

Norfolk County Medical Society.

The surgical section of the Norfolk County Medical Society met in the rooms of the Society for their regular monthly meeting on November 8th, at eight o'clock, Dr. C. W. Doughtie, chairman of the section, presiding.

The first paper of the evening on the "Diagnosis and Treatment of Ureteral Calculi," was read by Dr. Jas. H. Culpepper.

Dr. Culpepper began by showing the difficulties of diagnosis when depending on either cystoscopy or X-ray alone. The Mayo Clinic has shown that when used alone the radioscopic findings are negative in about 40% of cases. Drs. Geraghty and Hyman have obtained slightly better results, or about one in three of failures. Combined with the cystoscope, however, and perfected technique with ureteral catheterization, the failures are comparatively few. The cause of failure of the radiograph is due to the chemical composition of certain stones that do not cast a shadow, and to the presence of certain extra-ureteral bodies in the field, such as phleboliths, calcified plaques in the arterial walls, calcareous glands and foreign bodies in the intestinal tract that come into the plane of radiation.

Dr. Culpepper stated that the catheterization of the ureter and dislodging of the stone can be accomplished in a greater number of cases than we would believe, and in many that are apparently impossible. He begins with a small sized catheter and passes it to the seat of the stone, then injects alboline as freely as possible and withdraws the catheter. If the stone is not passed by the second or third day the performance is repeated, using a larger catheter each time until the largest size is passed that the cystoscope will take, No. 9 French.

For the comfort of the patient he advocates the use of cocaine in every case in spite of the disadvantages of its uses. Dr. Culpepper advised the use of the cystoscope in every case before doing a laparotomy for stone in the ureter because the stone may move in in a few hours.

Contraindications for the use of the cystoscope are, as Braasch states:—

1st. The stone is more than 2 Cm. in diameter.

2nd. Acute ossification with continuous obstruction.

3. Acute renal infection.

4. The patient's intolerance to cystoscopic manipulation.

5. Anatomic deformity.

Not more than six days should elapse before resorting to laparotomy in the treatment of any case on account of the danger of permanent loss of function for the ureter.

Dr. Culpepper and Dr. Whitlock of the Sarah Leigh Hospital Staff, showed a number of radiographic plates from their collection illustrating the work, such as stones of various locations and sizes in the ureter and catheters in situ.

The next paper was read by Dr. Stanley H. Graves, on "Hemorrhage from the Urinary Tract and its Significance."

Dr. Graves stated that patients as a rule are careless of the significance of blood in the urine and that many physicians share this neglect. While every case does not mean that pathological processes have set in, yet the appearance of hemorrhage is often the first symptom of early and also of late morbid changes in the urinary tract.

The amount of hemorrhage does not indicate the seriousness of the pathological processes.

When hemorrhage is suspected the following points should always be borne in mind:

1st. Is it blood?

2nd. Its source.

3rd. What pathological processes occasion it?

The first question pertains to cases showing small amounts of blood microscopically appreciable, or to those that require chemical tests to show its presence.

The second question deals with the origin of the blood from the kidney down, whether from the renal parenchyma, the renal pelvis, the ureter, the bladder, the seminal vesicles, the prostate or the anterior and posterior urethra.

Dr. Graves took up the diagnostic value of different procedures and instruments, and stressed the importance of carefulness and the need of experience in locating the source of bleeding.

He then went into the morbid processes and possibilities of differential diagnosis stating that it is often necessary to make an exploratory incision to clear up the doubt as to the origin of the disturbance.

Both papers were freely discussed and the meeting was largely attended.

The Society has recently formed a new section for the Eye, Ear, Nose and Throat branch with Dr. B. R. Kennon as chairman.

Dr. Southgate Leigh, the president, has succeeded in arousing the enthusiasm of the men and the meetings have been exceedingly interesting.

EDWARD D. STARKE

210 *Taylor Building.*

The Warren - Rappahannock - Page County Medical Society

Held its regular meeting at Luray, Va., November 9, Dr. J. M. Ropp presiding. Papers were read by Dr. S. S. Gale, of Roanoke, on Blood Transfusion; by Drs. E. G. Gill and Kenneth D. Graves, of Roanoke, on The Tonsil from a Clinical and Pathological Standpoint; by Dr. J. T. McKinney, of Roanoke, on The X-Ray in Tuberculosis; and by Dr. S. Beverly Cary, of Roanoke, on Idiopathic Hematuria. The papers were all interesting and instructive as were also the discussions which followed.

The following officers were elected: President, Dr. E. G. Brumback, Luray; vice-president, Dr. George H. Long, Luray; secretary-treasurer, Dr. F. L. Smith, Stanley. The next meeting will be held in Front Royal in April 1921.

Arlington County Medical Society.

At a meeting of the Arlington (formerly Alexandria) County Medical Society at Clarendon, December 1, the following officers were elected for the ensuing year: Dr. R. N. Sutton, Clarendon, president: Dr. W. C. Welburn, Ballston, vice-president: Dr. B. H. Swain, Ballston, secretary-treasurer. There was a good attendance and interesting and profitable discussions were held on several subjects. Much enthusiasm was manifested.

The Society is a good live one and it is earnestly hoped that all the physicians of the county will attend the meetings and so build up a society in which every doctor in the county will be interested.

B. H. SWAIN,
Secretary-Treasurer.

The Prince Edward County Medical Society

Held its regular monthly meeting on November 16, at Dr. Thos. G. Hardy's private hospital, in Farmville. Dr. William E. Anderson, the president, was in the chair and Dr. Hardy at the secretary's desk. Papers were read by Dr. Anderson on "Closer Association of the Town and Country Doctors" and by Dr. Hardy on "Indigestion", and these were freely discussed by the members present. Dr. Susan A. Price, of the Normal School Infirmary, invited the Society to meet with her in December, which invitation was accepted. Following the business session, the members adjourned to Dr. Hardy's home where they were tendered an informal reception and refreshments were served.

The South Piedmont (Va.) Medical Society

Held its semi-annual meeting in Masonic Hall at South Boston, November 23. The attendance was good and an afternoon and evening session were held. Several interesting papers were read and these were freely discussed. Present officers of the Society are: Dr. John A. Owen, Turbeville; vice-presidents, Drs. W. W. Robertson, Witt, S. R. Jordon, Virgilina, C. W. Tucker, Drakes Branch, and Geo. P. Hamner, Lynchburg; secretary, Dr. Geo. A. Stover, South Boston, and treasurer, Dr. H. S. Belt, South Boston.

The Luenburg County Medical Society,

At its regular meeting on December 7, elected the following officers for the next twelve months: President, Dr. H. T. Hawkins, Kenbridge; Vice-President, Dr. E. M. Mann, Kenbridge; Secretary-Treasurer, Dr. Robt. Whitehead, Meherrin.

EDWIN M. MANN.

The Shenandoah Valley Medical Association

Was organized at a meeting held in Harrisonburg, Va., early in December. It is composed of physicians from the counties of Augusta, Rockbridge, Bath, Rockingham, Shenandoah, Frederick and Page. The idea of the formation of this Society had its inception several months ago, when the Rockingham County Society held a meeting, at which Augusta County doctors were their guests. The plan of organizing the doctors of the Shenandoah Valley into a society was endorsed at that time and a committee was appointed to

take up the plan with the doctors in the other counties. A paper was read by Dr. J. C. Flippin, of University, Va., and a banquet followed the business session. Meetings will be held semi-annually, on the last Thursday in May and September. The May 1921 meeting will be held in Staunton.

Officers elected are: President, Dr. Marshall J. Payne, Staunton; vice-presidents, Drs. C. E. Conrad, Harrisonburg; P. W. Boyd, Winchester; W. F. Driver, New Market; secretary, Dr. A. C. Byers, Harrisonburg; treasurer, Dr. J. M. Biedler, Harrisonburg.

Executive Committee: Drs. R. P. Bell, Staunton, and J. E. Lincoln, Lacey Spring.

Program Committee: Drs. J. H. Deyerle, Howard Armstrong, E. R. Miller, of Harrisonburg, and A. L. Tynes, R. P. Bell and J. H. Rawlings, of Staunton.

Membership Committee: Drs. G. G. Snarr, Harrisonburg, E. C. Stuart, Winchester, and G. H. Thomas, Staunton.

Book Announcements

Medical Clinics of North America. Published by W. B. Saunders Co., Philadelphia. Sold only by the clinic year—six numbers. Price, cloth $16.00, paper $12.00.

Medical Clinics of North America begins its fourth year with rather a pretentious *New York* issue of 369 pages embracing clinics on practical and scientific subjects at nine of the leading hospitals of the metropolis. Of particular interest, mention may be made of the following: Complications and Sequelae of Influenza and their Management, by Dr. Harlow Brooks; Treatment of Advanced Heart Failure, Dr. Cary Eggleston and he says if one is not prepared to determine the activity of the digitalis by the cat method and there is no special indication for haste in digitalizing the patient, a satisfactory method of administering is to give a dram of the tincture every six hours for four doses. Then reduce the dose by one-half and the intervals to four hours, etc.

The Prevention and Serum Treatment of Labor Pneumonia by Dr. Russell L. Cecil will be doubly interesting to the Virginia profession. Space forbids even an enumeration of the authors and articles of this issue which the reviewer regards as the best ever published in this series.

Criticism might be offered for putting fifty pages in "Diagnosis of Encapsulated Pleural Effusion", as well as the refusal of the publishers to sell single numbers.

Number Two—*Boston* issue consists of three clinics from the Massachusetts General Hospital, nine from Boston City Hospital and six from the Children's Hospital. It emphasizes the fact that Boston is a great teaching centre, particularly in pediatrics.

H.

A Text-Book of Physiology. For students and practitioners of medicine. By Russell Burton-Opitz, S. M., M. D., Ph. D., Associate Professor of Physiology, Columbia University, New York. Philadelphia and London, W. B. Saunders Company. 1920. 8 vo. 1185 pages, with 538 illustrations. Cloth, $7.50 net.

We think it fair to say that the Burton-Opitz Physiology brings the subject up to the present date and must be considered among the very best physiologies ever published. It is complete, well illustrated, unusually succinct and entertainingly written. Modern physiological views are discussed. Many experiments are cited. References to the literature are excellent.

The explanation of reflex phenomena is the clearest we have seen. The section on the heart and circulation is deserving of the highest praise. The section on internal secretion is the most elaborate and the most practical we know of in any book on physiology.

The whole book is entertaining, instructive, well arranged and well written and we can unhesitatingly recommend it both as a text book for students and a reference book for practitioners.

B. R. T.

The Fundamentals Of Human Anatomy, Including Its Borderline Districts. From the Viewpoint of a Practitioner. By MARSH PITZMAN, A. B., M. D., Professor of Anatomy in Dental Department of Washington University, St. Louis. 8 vo. 356 pages with 101 illustrations. St. Louis. C. V. Mosby Company. 1920. Cloth. Price, **$4.00**

Exophthalmic Goiter And Its Nonsurgical Treatment. By ISRAEL BRAM, M. D., Instructor in Clinical Medicine, Jefferson Medical College, Philadelphia; Member of the Society for Study of Internal Secretions. St. Louis. C. V. Mosby Company. 1920. 8vo. 438 pages. Cloth, Price, $5.50.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.

OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D., Editor.

G. H. WINFREY, Business Manager and Secretary-Treasurer.

AGNES V. EDWARDS, Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 47 DECEMBER, 1920. No. 9

Editorial

Heart Sounds.

In auscultation of the heart the first and second sounds should be considered carefully. The variations from normal carry some significance and should be assigned a position of proper importance in the evidence gathered. While some may feel that little reliance may be placed on interpretations adduced from abnormal heart sounds, yet many clinicians in cardiac examinations attend quite carefully to impressions received during a heart study to the quality and timing of the heart sounds.

The first sound is made up of two accepted factors, the contraction of the ventricular walls and the tightening and closure of the mitral and tricuspid valves. From this combination of elements in heart systole is emitted that sum of vibration called the first sound. Necessarily consequent upon the origin of the sound many alterations and variations are found, often in hearts well within the domain of the normal. One's opinion of the first sound may be influenced by its faintness, its brevity, its absence, or its reduplication. If it is quite faint one might feel, if in keeping with other signs and symptoms, that the heart is weak and dilated; if it is brief and "flappy" that the ventricular walls are thin; if absent, that valvular disease exists; if reduplication exists that the auriculo-ventricular bundle leading to the right ventricle is damaged or that contractility and conductivity on right side is not as normal as on the left side or *vice versa*.

The second sound is produced by the closure of aortic and pulmonary valves. An accentuation of the aortic element of the second sound may be taken as an indication of increased aortic pressure; pulmonary second sound accentuation may indicate obstruction to circulation through the lungs. This sound may be increased in mitral stenosis; in this lesion it possesses peculiar significance.

Heart Murmurs.

Heart murmurs no longer, in the minds of clinicians, retain the position of importance formerly held. Every murmur does not necessarily invalidate the heart. A heart may be quite normal in its function and yet along its base or at its apex a soft systolic murmur may be elicited. There are so-called functional murmurs and organic murmurs. A functional murmur may occur constantly or intermittently, in the heart systole as a result of dilatation or relaxation of the muscular structure of the heart. This may follow from a number of causes, chief among which are strain, infection which has produced some loss of tonus or degeneration in the heart muscle, or anemia. In such cases, at the apex, auscultation may detect soft systolic murmurs, indicating regurgitation of blood during contraction of the ventricles: leaking of blood into the auricles.

Functional murmurs are often heard in young hearts from various causes.

There are "relative murmurs" also, which are in hearts with organic lesions but these murmurs are found at orifices which have undergone, in the process of decompensation, dilatation so that regurgitation takes place during systole over otherwise normal valves. These murmurs are secondary and indicate a failing heart. Then, there are so-called organic murmurs and they are heard in hearts in which endocarditis from infection has occurred or in which sclerotic fibrosis has taken place producing roughened and beaded surfaces, preventing complete closure or producing stenosis or a combination of obstruction and regurgitation in the same orifice. These murmurs are of particular importance and indicate the location of the disease in the heart. But murmurs alone by quality and

time cannot be relied upon in making up a clinical judgment of the heart's efficiency. They should be considered in connection with the size, rate, rhythm of the heart and the various other signs in the vascular system and organs. Estimations of the real significance of murmurs is a matter of careful examination of the heart in connection with signs and symptoms within and without the heart. The writer has observed hearts for ten to fifteen years with marked murmurs, and, while the murmurs are as pronounced today as years ago, the hearts are functioning well and give little if any evidence of failing in function.

Potain (quoted by Hirschfelder) gives the following points worth remembering in differentiating organic from functional or accidental murmurs in mitral and aortic orifices. In mitral insufficiency, the murmur is holosystolic, usual rough, maximum at the apex. The cardio-pulmonary (functional) murmur has its maximum two or three centimeters lateral wards from the apex, associated with systolic retractions, and soft in tone.

In aortic insufficiency the murmur commences exactly at the beginning of the second sound and almost entirely fills diastole. The functional murmur follows the second sound and varies in position and is unassociated with gross heart changes.

Breathlessness.

This sign of heart weakness may be ranked at once as among the most important. A weak heart and breathlessness, when associated, portend a serious condition. Failure to send sufficiently aerated blood to the respiratory centers induces breathlessness. Of course, it is not to be inferred that all breathlessness means always a weak heart because many other factors may induce breathlessness and a cardiac study must be made to determine whether or not breathlessness and cardiac weakness are associated. Blood states, diseases of the kidneys, mechanical conditions in the lungs and pleurae may be at work to produce shortness of breath while the heart may be in good function.

In heart disease breathlessness on exertion must be seriously considered, although patients may be shortwinded without being in a critical situation. On exercise, the cardiopath may well be considered in poor condition who suffers pronounced shortness of breath. This sign may be given the cardiopath as one for his guidance. He may rightly be told that shortness of breath during any exertion should serve as a sign that he has gone a little too far and to assume a position whereby he may as quickly as possible be relieved of breathlessness. While breathlessness on exertion is significant of heart exhaustion, breathlessness at rest is compelling in its significance of an extreme exhaustion. Of course, other factors which bring about orthopnea should always be eliminated,—factors such as asthma, pleurisy with effusion, emphysema, hydrothorax, uremia.

"Breast Pang."

The pain over the left side of the chest spreading to the inner side of the upper and fore arm, the peripheral distribution of the lower cervical nerve and the upper 3 or 4 dorsal nerves, is an exremely significant sign of heart disease. The breast pain may vary very much in intensity. The very intense pain will necessarily receive, if time affords, every attention from the doctor. The shock and alarm and the agony inflicted make the patient seek succor. But, sometimes, equally important is an indefinite and dull substernal pain. Such patients with chronic myocarditis may be in imminent danger of death. Physicians rarely, it is feared, attach a proper degree of importance to these cases. Watch for the dull aching pain in the chest of the patient with high blood-pressure or with a very low blood-pressure.

Two Cardiac Irregularities.

Auricular fibrillation is a condition in which the sino-auricular node has ceased to control and the auricles are in a state of constant tremulous contractions without adequate power, and the action of the ventricles is dissociated making strong and weak contractions. The ready recognition of this most common arrhythmia is highly important to every doctor. Nearly all of the serious heart cases suffer from fibrillation of the auricles. In this situation, digitalis is the soverign drug and it acts with spectacular and salutary effect. Many of higher fibrillating auricles may show a radial pulse approaching normal although irregular. The auricles may make feeble con-

tractions at 160 per minute while the ventricle may succeed in making 90 or less. Look out for auricular fibrillation.

Auricular Flutter is a rare muscular irregularity of the heart and Lewis has classified auricles contracting at 200 per minute as in a state of flutter. For this condition graphic records are quite necessary in order to make accurate diagnosis.

Virginia's Physician-General In the Revolution.

(*Continued from page* 393.)

About July 3, 1775, when George Washington, who had been elected by the Second Continental Congress Commander-in-Chief of the continental army only two weeks previously, assumed command of American army on the common at Cambridge, the first Medical Director of the United States was already engaged in the task of providing for wounded and sick soldiers. This Surgeon-General and Director of Hospitals, was Dr. Benj. Church of Massachusetts. Dr. Church was a prominent man of the time. He was a member of the House of Representatives of Massachusetts, he was one of the Committee, appointed by that body to receive and conduct General Washington to his command, General Washington arriving in Boston from Philadelphia, where he had been serving as a delegate from Virginia in the Second Continental Congress. Dr. Church's career soon terminated in ignominy. He was convicted of treason. Letters, written by him in cipher and carried by a woman, were found to be filled with information describing to the enemy the American forces and position. Dr. Church, after conviction and dishonorable discharge, fled the country and died at sea.

In October 1775, about four months after this, the second Medical Director took charge of the Medical Department of the Revolution, and endeavored to organize the medical men and equip the hospitals. This was Dr. John Morgan of Philadelphia. He joined the army and assumed charge in the vicinity of Boston. And the story of the effort at the development of the medical department of Continental army by Dr. Morgan is one of the greatest interest which should thrill the heart of every medical man of this country, as the hardships and disastrous story of military efforts of that brave and heroic body of Americans has always fired the soul of Americans. Dr. Morgan worked diligently and laboriously against untold and insuperable difficulties and obstacles. Supplies were altogether crude and inadequate, and ignorant, untrained, jealous, subordinate regimental surgeons produced a chaotic condition in the hospital and medical service.

The blame for the failure of this period in the history of the medical department of the Revolution should not be placed at the door of Dr. Morgan because he appears to have been diligent and faithful, struggling against unconquerable adversities. Every conceivable difficulty harassed not only the medical department but also the general military service as well, and as a result all through the months of 1776, from February to December, the year was one of disaster. The details are somewhat outlined in one of Morgan's letters describing the hospital about New York. He wrote, "I am well off in the general hospital, except in a few particulars. I have provided ten thousand bandages, have some hundred sheets and a stock of medicine (though unassorted). I have capital instruments nearly enough for hospital use. But in the meantime what is to become of the regimental surgeon? Should I divide my stores among them they would be dissipated and ourselves left destitute. To observe a medium I have ordered to be issued from the general hospital stores, sixty bandages, two sheets, four tourniquets, a quantity of lint and tow and a chest of medicines. But of instruments I have none to spare, and I begin to want capital medicines. Moreover symptoms of a putrid (typhus) fever begin to appear."

And to think the army at this time consisted of forty regiments! How pathetic the letter of a medical director facing the ravage of a putrid fever! So lamentable were the military efforts of the continental army during the New York campaign, 1776, and so correspondingly inadequate the medical service under Dr. Morgan, that a reorganization of the medical department was effected by which Congress directed that Dr. William Shippen, Jr. of Pennsylvania be (Oct. 9, 1776) appointed and that jurisdiction be divided giving Dr. Morgan control of hospitals east of the Hudson and Dr. Shippen control of those west of the Hudson. About this time, in fact coincident with this

change, the celebrated organization known as the "Flying Camp" of the Revolution was created. It was composed of troops from Pennsylvania, Delaware, Maryland and Virginia comprising in all about ten thousand soldiers. This force was put into the field, under the command of General Hugh Mercer, a Virginia physician from Fredericksburg. Under General Mercer, in the capacity of Medical Director was Dr. William Shippen, Jr., of Philadelphia, and Dr. William Brown of Alexandria, Va., assistant Medical Director (Sept. 20th, 1776). In January 1777, General Mercer was killed at Princeton.

In the spring of 1777 a general and more complete reorganization of the Medical Department was undertaken by the Congress. And on April 11th, 1777, Dr. William Shippen, Jr., was made Surgeon General and under him three departments were created; the Northern, from Boston to the Hudson, the Middle, from the Hudson to the Potomac; the Southern from the Potomac to South Carolina. Each of the departments were commanded by a Physician General.

The culmination of this year of distress was "Valley Forge"; for, in the winter 1777-78, Washington's army (11,800) encamped at Valley Forge, 24 miles west of Philadelphia. The English were in possession of Philadelphia; the Congress of the United States was in session at York in western Pennslyvania; Washington chose the spot on the banks of the Schuylkill, sheltered by hills, in order to protect Congress. Here the army erected a crude log camp on a more or less military plan and, with fortitude, patience and bravery withstood the privations of hunger, extreme cold and exposure during the long hard winter months. (Int. Encyclopaedia).

The troops braved the winter in their tents until they were able to cut down trees and make log huts for their habitation during the rigorous snowy weather of that winter. The huts were fourteen feet by sixteen, the logs plastered with mud and erected six feet and a half high. The roofs were made of log slab plastered with clay. The fire-places were made of logs and mud. The huts for the troops were formed on streets and those for the officers were placed in a line to the rear. In each hut there camped twelve soldiers and a non-commissioned officer. A general officer, staff officers of brigades and regiments and field officers of regiments, each had a hut. This formed the military village or camp of Valley Forge.

General Washington's letter (Dec. 23, 1777) to Congress then at York, Penn., recites, under the effect of criticism and abuse of his contemporaries both in army, congress and public life, vividly the story of Valley Forge. Washington wrote, "Though I have been tender, heretofore, of giving any opinion or lodging complaints, as to charge that commissary department (commissariat) took place contrary to my judgment and consequences thereof were predicted; yet, finding that the inactivity of the army, whether for want of provisions, clothes or other essentials, is charged to my account, not only by the common vulgar but by those in power, it is time to speak and explain in exculpation of myself. With truth, then, I can declare that no man, in my opinion, ever had his measures more impeded than I have by every department of the army. Since the month of July we have had no assistance from the quarter-master general; and to want of assistance from this department the commissary-general charges great part of his deficiency. To this I am to add that notwithstanding it is a standing order, and often repeated, that the troops shall always have two days provisions by them that they might be ready at any sudden call yet an opportunity has scarcely ever offered of taking an advantage of the enemy that it has not been either totally obstructed or greatly impeded on this account."

Such was the state of distress and disorder when Virginia's representatives assumed command of the Medical Department of the Middle zone from the Hudson to the Potomac. Here it was in Jersey and Pennsylvania that the campaigns of 1777-80 were fought. Upon the Virginians to be briefly mentioned in biographical sketches fell the duty of directing the medical services and the hospital. Little is obtainable of the details of their efforts, but it is a pleasing reflection to think of their work in the medical department as free from criticism and court marshals so far as records investigated disclose.

As well as can be stated Dr. Benj. Rush was appointed July 1777 Physician-General of the Middle Department. Dr. Rush became in-

volved in the "Conway Cabal", a conspiracy of the officers in high command against General Washington. Dr. Rush was an ardent partisan of General Gates who attempted to supplant General Washington in this dark hour of America's fortunes. With the downfall of the cabal, Dr. Rush resigned. Dr. Walter Jones of Virginia, it maybe, preceded Dr. Rush serving in the capacity of Physician-General only two months. Upon Dr. Rush's resignation, Dr. William Brown of Virginia was appointed and following him Dr. James Craik, General Washington's friend and physician, assumed charge.

Walter Jones, M. D., 1745-1815, born in Northampton County, Virginia, was educated at William and Mary College, graduating in 1767 and studying medicine at, and graduating M. D. from the University of Edinburgh, in 1769, the subject of his thesis being "De Dysenteria". He is said to have been held in high esteem by Cullen and his other professors, and was described as "the most shining young gentleman of his profession in Edinburgh, and one who would make a great figure where ever he went". He settled and practiced in his native county and maintained the high standing as a physician and a scholar, and on April 11th, 1777, received the appointment from Congress of Physician-General to the Hospitals of the Middle Department, but held the position only two months resigning the first of July following. He was elected to and served in Congress in 1797-99 and in 1803-11.

It was said of him by an intimate acquaintance that "for the varied and intent of his learning, the originality and strength of his observations and captivating powers of conversation he was one of the most extraordinary men he had ever known. He seemed to possess instinctively the faculty of discovering the hidden cause of disease and applying with promptness and decision peculiar to himself the appropriate remedy". He left one son, Walter, when he died on his plantation in Northumberland County, Va., on December 31, 1815.*

William Brown, M. D., (1747-1792) of Alexandria, Va., was born in Scotland, his parents temporarily residing in Scotland at the time of his birth, at Haddingtonshire, where his grandfather had left an entailed estate. Dr. William Brown was the grandson of Dr. Gustavus Brown (1698-1750?) of Rich Hill, near Port Tobacco, Maryland, and the son of the Rev. Richard Brown of the Colonial and Established Episcopal Church. Dr. Wm. Brown graduated with the degree of M. D. in 1770 at the University of Edinburgh; the subject of his thesis at graduation being "De Viribus Atmosphaerae". This was written in Latin. Settling in Alexandria, Va., upon his return home, he soon attained a high professional rank and being a man of culture and polished manners, became intimate with many of the leading men in statesmanship of the day, and among them Washington, Jefferson and Madison. At the beginning of the Revolution 1775 he entered the service of his country as a surgeon to Colonel Woolford's regiment (2nd Virginia Regiment) of Virginia troops. On the twentieth of September 1776, he was elected by the continental Congress assistant to Dr. Wm. Shippen, Jr., a chief physician of the continental army. Upon the recommendation of Dr. (General) Hugh Mercer, who was killed in the battle of Princton, January 31st, 1777, he was elected by Congress, February 7th, 1778, to be physician-general of the middle department in place of Dr. Benj. Rush. Dr. Brown resigned this commission on July 21st, 1780, returning to private practice after serving five years in Revolutionary army. On his resignation Congress passed the following resolution. "That Congress entertains a high opinion of the ability, integrity, and past services of Dr. William Brown, Physician-General, but as circumstances will no longer permit his continuance in the service, his resignation is accepted."

In resigning from his regiment to take service as assistant to Dr. Shippen he forfeited his right to pay in bounty lands, which required three years of continuous service in the troops of the State of Virginia but, so highly were his services esteemed, the General Assembly of Virginia made an exception in his case and decreed that he should receive the pay due him, and also, that he should be entitled to the bounty of land allowed surgeons of regiments raised under the authority of the state (Hening's

* From Kelly: Cyclopedia of American Medical Biography. Vol. II, page 58.

Statues, Vol. VI). While and during the encampment of the Revolutionary forces under General Washinton at the Valley Forge, twenty miles west of Philadelphia, at a place named Lititz, Lancaster County, Pennsylvania, Dr. Brown wrote in 1778 the first Pharmacopeia published in the United States of America. The hospital of the United States Army that winter, located in Lititz, Lancaster County, Pennsylvania, was in a building at present (1884) occupied by the Lititz Academy, formerly the Brothers' House. A number of soldiers who died there were buried near this town.

The Pharmacopeia is written entirely in Latin. It consists of 32 pages. The following English translation of the title page and the preface, made by Professor Nevin, of Franklin and Marshall College, is interesting.

"Repertory"
of
Simple and Efficacious Prescriptions,
For the use of the
Military Hospital
Belonging to the Army
of the
United States of America
Adopted especially to our present state of need and poverty, which we owe to the ferocious cruelty of the enemy, and to a cruel war brought unexpectedly upon our fatherland.
Wm. Brown, M. D., Author
Second Edition
Philadelphia
From the office of Charles Cist
"1781."

"With an asterisk are denoted such prescriptions as ought to be prepared and compounded in the general laboratory, the others are to be mixed for the occasion at the office of the hospitals. There are very many prescriptions of medicines, solid and dry, which might be afforded, more convenient for use, at any rate, more elegantly, in a liquid form, were there not wanting for this a sufficiency of phials; and all such preparations as are less efficacious or for patients made use of only for the sake of elegance, such, as simple waters, etc. and various plasters and unguents hardly necessary or useful, from the inconvenience of transportation, it is our desire to avoid. Lititz, March 12th, 1778."

Following are a group of prescriptions taken from this work:

37. Infusum Sennæ

Rec. Fol. Sennæ Semuncian
Fruct. Tam unc. I vel
Pulv. Cream tartar. semunciam.
Aquæ bullieutis lib I
Infunde per horam, et cola
Pro una dosi unc. Iv quaque semi-hora
Sumendae ad alvi solutionem.

48. Pilulae Antimonioles cum Mercurio
Rec. Tartar Emetic drachm i
Calomel ppt. drachm ii
Syrupi Q. S.
Formetur massa in pilulas 120
Dosis I Omni nocte; vel bis terve die.

56.
Pilulae Foetidae cum aloe

Rec. Gum. asal foetid. Scrupul i
Aloes succotrim gr. v
Mucilog. gum. arabic Q. S.
Formetur massa in pilulas 4

Doses a ii ad iv — utenda in gravi Stomachi flatulentia cum alvi constipatione, quae alequando in febre maligna et castrensi ocurrit, ad flatum deorsum expellendum

77. Pulvis Scelliticus Nitrosis

Rec. Pulvscillae andae drahm i
Salis nitro drachm iiss
Piperis Jamaicensis drachm ss m
Dosis a gr. v ad gr. xv. ter quarterve die.

Dr. Brown resided in Alexandria after the Revolution and practiced his profession there up to the time of his death. He was one of the charter members of the Society of the Cincinnati in the State of Virginia which was organized in the city of Fredericksburg in the year 1783. He married his first cousin Miss Katherine Scott, daughter of Rev. James and Sarah Brown Scott, and they had nine children, six daughters and three sons:—William, Richard and Gustavus. Richard and Gustavus became physicians and practiced in Alexandria for years, while William studied law in Richmond.

Dr. William Brown died in January 1792 and was buried at Preston, the Alexander Estate, near Alexandria, Virginia.*

James Craik M. D. (1730-1814). This Physician-General was born at his father's country seat, Arbigland, near Dumfries, Scotland, and studied medicine at Edinburgh, emigrating to the North American Colonies and prac-

* From Kelly: Cyclopedia of Medical Biography.
Private Papers in the hands of Alexander Gustavus Brown, Jr., M. D. Richmond, Va.
Reprint First Pharmacopeia Published in the United States. Reprint from Amercan Journal of Pharmacy (1884).

ticing medicine first in the West Indies and later in Virgina, where he formed a connection with the young planter and surgeon, George Washington, and established a friendship disturbed only by the death of Washington. He was appointed surgeon of the Virginia Provincial Regiment in 1754, of which Washington held the command and was present at the battle of Great Meadows and also at Monongahela, where he dressed the wounds of the illfated Braddock and many others. At the close of the Braddock campaign upon the formation of the Virginia Provincial army Craik continued in the service as the chief medical officer and remained in the service until the disbandment of the forces at Fort Pitt, 1758. During the time that he practiced medicine in Charles County, Maryland, Washington and he continued their intimacy and made famous exploring trips into the West which were noteworthy even in those adventurous days. An active patriot in early Revolutionary times, he became assistant Medical Director of the hospitals of the Middle Department at the solicitation and special nomination of Washington, and organized the Medical Department of the forces, in Count Rochambran, becoming junior of the four chief army hospitals, physicians and surgeons taking the seniorship second in rank to the director general. This position he held until mustered out at the end of the war in 1783, after personally participating in many of its most important events including the capitulation at Yorktown. Through his agency the "Conway Cabal" against General Washington was exposed.

Shortly after being mustered out at the close of the Revolutionary War, he took up his home at Alexandria in order to be near his friend's Mount Vernon home, until 1798, when war with France seemed inevitable and Washington was again summoned to lead the army. But he made the appointment of Craik as the head of the medical department one of the conditions of his acceptance of the command, and the latter was duly commissioned Physician-General, retaining the office until the army was disbanded in 1800. Some months before the official severing of his relations with the military establishment, however, he had returned to his Virginia home where he was soon called upon to attend his old friend in that illness which, on December 14th, 1799, deprived the country of its most illustrious citizen. Craik survived him fifteen years, a time passed partly in active practice and at the last in retirement. (L. S. P.)*

(To Be Continued.)

News Notes

The Tri-Sate Medical Association of The Carolinas and Virginia

Will hold its twenty-third annual session in Spartanburg, S. C., February 16 and 17, 1921, with headquarters at Hotel Cleveland. The program, which is more than half completed, shows papers of wide scope and of unusual excellence. A few guests of international reputation will be among the speakers.

Dr. Baxter Haynes, of Spartanburg, is chairman of the local committee of entertainment. The local medical society and the Chamber of Commerce are preparing for the entertainment of those in attendance. A number of reservations have already been made at Hotel Cleveland and it is suggested that those expecting to attend should make reservations as soon as possible.

The secretary-treasurer, Dr. James K. Hall, of Richmond, Va., and the president, Dr. John P. Munroe, of Charlotte, N. C., have begun an active campaign to increase the membership of the Society. Members in good standing of the medical societies of the states of Virginia, North Carolina and South Carolina, are eligible to membership in the Tri-State Association. Those desiring to join should send application to either of the above named officers.

Other officers of the Association are:—Vice-presidents, Drs. John A. Williams, Greensboro; W. W. Fennell, Rock Hill, S. C.; and H. S. Hedges, Charlottesville, Va. Members of the Executive Council are:—Drs. M. O. Burke, Richmond; F. M. Hanes, Winston-Salem; F. H. McLeod, Florence; W. O. Spencer, Winston-Salem; Jas. K. Hall, Richmond; Julius H. Taylor, Columbia, S. C.; Chas. A. Mobley, Rock Hill, S. C.; W. L. Peple, Richmond; J. P. Matheson, Charlotte.

* From Kelly: Cyclopedia of American Medical Biography.

Opium Smuggling Plot Nipped in Bud.

What was believed to be a plot of enormous proportions to smuggle opium into the United States was caught up with in Norfolk, Va., November 29, when fifteen Chinese seamen were arrested with a very large quantity of the drug in their possession. Nine of the Chinamen were arrested as they were leaving the Britsh steamer Iver Heath, and the other six were apprehended as they were about to board a train for New York. They were carrying the opium in their hand baggage and trunks.

A member of the crew, Chue Foo, who secured a launch and carried his countrymen ashore, stated that he had been employed to conduct the men to New York where they were to ship on a Chinese vessel. Customs officers were of opinion that the opium was intended for distribution in New York and an effort is being made to connect this smuggling with an opium ring that is believed to exist in this country.

A bond of $16,000 was required of the owners of the ship and the case against the Chinamen was continued to give customs officials opportunity for further investigation.

Tuberculosis Foundation of Virginia

Perpetual fight on tuberculosis is the chief claim for public support advanced by the Tuberculosis Foundation of Virginia, for which a State charter has been issued and which has taken up at Catawba Sanatorium the work specified in its articles of incorporation.

For about five years there has been at this sanatorium an organization of patients and former patients, known as the Catawba Sanatorium Alumni Association. The Association had for its primary purpose the provision of funds for the sanatorium care of indigent consumptives from all parts of the state, but the fund for this purpose was so small that at times it was impossible to take care of as many as were worthy.

The Tuberculosis Foundation was incorporated for the purpose of providing a permanent fund for the relief of these cases. It is provided that such funds as may be entrusted to the Foundation shall be invested in perpetuity, and only the interest shall be used. It is hoped that the size of the fund may later permit an extension of the work. For further details write A. Lambert Martin, business manager of Catawba Sanatorium, who is secretary-treasurer of the Foundation.

Married—

Dr. Edward Latane Flanagan and Miss Louise Williams, both of this city, November 23.

Dr. Edward Sandidge, of Amherst, Va., and Miss Vera Tignor, of Portsmouth, Va., November 27.

Lt. Joseph Campbell Bennet, U. S., M. C., retired, and Miss Virginia Hansbrough Iden, daughter of Dr. and Mrs. B. F. Iden, of Manassas, Va., November 24. Dr. Bennet is from Brunswick, Ga., but in the early Spring, he and his bride expect to locate in Manassas, Va.

Dr. Joseph Anderson Speed and Miss Gladys Hunt Gorman, both of Durham, N. C., November 10.

Dr. J. Alexander Lipnick and Miss Ruth A. Berlin, both of Norfolk, Va., October 7.

In Hall Of Fame.

Dr. William Thomas Greene Morton, the discoverer of anesthesia, has been elected to a place in the Hall of Fame. He was first a dental surgeon and later a physician. Morton called his discovery letheon but it is now known as ether. It was first used publicly in the Massachusetts General Hospital, in the fall of 1846 by Dr. J. C. Warren, whom Morton told of his discovery.

Of the 178 names voted on this year for the Hall of Fame, seven were chosen, and it is interesting to note that Samuel Langhorne Clemens (Mark Twain) and Morton received the largest number of votes—72 each.

Norfolk County Health Board.

In the re-organization of the Norfolk County, Va., Health Board, Dr. Thos. A. Mann, formerly of Durham, N. C., has been appointed health officer of Norfolk County. Other members of the Board are Drs. A. M. Burfoot, Fentress; A. G. Horton, Ocean View, and Josiah Leake, Churchland.

The Rural Clinic

Has been adopted by the New York State Department of Health in several communities and results have been good. The plan was adopted as a result of the large number of men from rural districts who could not qualify for military service and the equally large

group who, on account of physical unfitness, became a ready prey for disease and epidemics. Specialists in all branches of medicine are sent to the center in which the clinic is to be held and all of the modern apparatus used in the diagnosis of disease, including the X-Ray, is used. The plan is simply to diagnose the disease with which the patient is suffering, leaving it to the family physician to carry out the proper treatment. Often the diagnosis of the local physician is confirmed and this confirmation makes it easier for him to secure the cooperation of his patient. The number of patients consulting these clinics often varies from 200 to 300 a day.

Dr. and Mrs. Raymond W. Paul,

Of South Richmond, have returned home after a motor trip to Roanoke, Va., where they went to attend the V.M.I.—V.P.I. foot ball game.

Retreat For Sick Opened.

The new Retreat for Sick, on Grove Avenue and Mulberry Street, in this city, has been opened and patients able to be moved were transferred to the new quarters on November 29, and others have been moved as their condition permitted. This is the oldest nonsectarian general hospital in the South, having been established in 1879, and in its long history has given more than 100,000 days of free treatment to those unable to pay. It is open to all creeds and races and every reputable physician and surgeon in the city is permitted to practice there. It is thoroughly modern and can accommodate 110 patients. There are about forty private rooms and wards for men and women, white and colored. A nurses' home adjoins the hospital. Miss Virginia Flippo will continue as superintendent and has thirty-five nurses to assist her.

Dr. John Hunter Selby,

Who was located in Washington, D. C., prior to entering the medical service of the army, has just received his discharge and, after January 1, 1921, will be located in the Second National Bank Building, Akron, Ohio.

Dr. Jeter R. Allen,

Who has for some years been located at Golansville, Va., has moved to Marshall, Va., where he will continue the practice of his profession.

Dr. E. C. Levy,

Of this city, qualified on the second of this month for his new term as director of public welfare of Richmond and furnished the necessary bond.

Dr. J. Fulmer Bright,

Richmond, has succeeded Col. Wm. H. Gill in command of the First Regiment Infantry, Virginia National Guard, and also has the rank of colonel.

Principal Causes of Death.

According to the Census Bureau's annual bulletin on mortality statistics for the death registration area in continental United States, to be issued shortly, there were 1,096,436 deaths in 1919, or 12.9 per 1,000 population. This is the lowest rate recorded in any year since the establishment of the registration area and was in striking contrast to the unusally high 1918 rate of 18 per 1,000, due to the pandemic of influenza. Diseases contributing most largely to the cause of death were in the order of their incidence, organic diseases of the heart, tuberculosis (all forms), and pneumonia (all forms).

The death registration area in 1919 comprised 33 states, the District of Columbia, and 18 registration cities in non-registration states, with a total estimated population of 85,147,842, or 81.1 per cent of the estimated population of the United States.

Seaboard Medical Association.

As we go to press, the Seaboard Medical Association of Virginia and North Carolina is holding its twenty-fifth (semi-jubilee) session at Elizabeth City, N. C., under the presidency of Dr. Cyrus Thompson, of Jacksonville, N. C. Dr. Clarence Porter Jones, of Newport News, Va., is secretary. The program shows a number of interesting papers by prominent doctors from the Carolinas and Virginia.

Dr. Williams Reappointed Health Commissioner.

Dr. Ennion G. Williams last month received his comission for reappointment as State Health Commissioner of Virginia for four years, effective July 1, last. Dr. Williams has held this office continuously since its creation twelve years ago and his work has gained nation-wide recognition.

Dr. E. L. Sikes,

Who was formerly connected with the Blackwood Coal and Coke Company, at Pardee, Va., has moved to Wise, Va., where he is doing private practice.

Dr. A. M. Byrd,

Until recently of southwest Virginia, is now at Warm Springs, Va.

Dr. H. V. Johnston,

Formerly of Princess Anne C. H., Va., is now connected with the U. S. Public Health Service, and is located at 26 Franklin Street, Northeast, Washington, D. C.

Interneship In Army Hospitals.

Circulars have recently been sent the State Medical Associations relative to requirements for securing appointment as interne in army hospitals and also giving information relative to appointment as first lieutenant in the medical corps of the regular army. Army life has its attractions for many and there are constantly vacancies to be filled. Detailed information about either appointment may be secured from the Surgeon General, U. S. Army, Washington, D. C.

Interneships in army hospitals are offered only to recent graduates of Class A medical schools. The age limit at present is 32 years. The pay is $60 per month with rations, quarters and necessary travelling expenses. The interne has the status of a civilian and is not subject to military law except as it applies to other civilian employees of the Medical Department.

X-Ray Burns Charged As Malpractice.

The Associated Press tells of a case recently tried at White Plains, N.Y., in which a woman was awarded a large amount for burns she suffered under X-Ray treatment. The doctor admitted the burns were due to the X-Ray, but stated that the patient proved to be unusually sensitive to the rays. The jury decided he was guilty of malpractice.

Apropos of X-ray burns, Dr. Charles Infroit, an X-ray specilist of Paris, died recently as a result of burns sustained in 1898, when one of his hands became infected as a result of the constant use of X-ray. Since that time he has undergone twenty-four operations, the last being on August the first of this year.

Association of S. A. L. Surgeons.

The Association of Surgeons of the Seaboard Air Line Railway, at their annual meeting in Savannah, Ga., this month, selected Birmingham, Ala., for the 1921 place of meeting, and elected Dr. H. C. Dozier, Ocala, Fla., president, and re-elected Dr. J. W. Palmer, Ailey, Ga., secretary-treasurer.

Dr. D. Hunter Marrow,

Formerly of Union Level, Va., is now at 113 Live Oak Avenue, Daytona, Fla.

Dr. F. M. Nichols,

Recently a member of the staff at Purcellville, Virginia, is now at Glenwood, N. C.

Dr. Matas Succeeds Dr. Dyer.

At a recent meeting of the Board of Trustees of the American Medical Association, in Chicago, Dr. Rudolph Matas, of New Orleans, was elected to succeed the late Dr. Isadore Dyer as a vice-president of the Association.

Dr. George H. Barksdale,

Charleston, W. Va., was elected president of the West Virginia Tuberculosis Association at their annual meetng, held recently.

Quarantine For Venereal Diseases.

According to *Public Health Reports*, the First District Court of Appeals of California has upheld the right of a local health officer to detain and quarantine persons venereally infected. The case in question was that of a woman held in quarantine because of being infected with venereal disease. Habeas corpus proceedings were instituted for the woman's release, but the court held that health authorities had the power to isolate venereally infected people.

Venereal Diseases Reported.

Public Health Reports states that during the months of July, August and September, 91,195 cases of venereal diseases were reported to the State boards of health. This was an increase over the preceding three months of 21,781 or about 31 per cent. This however, is not considered as indicating an increase in the prevalence of venereal diseases, but is the result of better reporting on the part of physicians.

Spain Overrun By Doctors.

From the *Medical Record* we note that for-

eign practitioners, particularly Austrians, have invaded Spain in such numbers, that native physicians and surgeons have appealed to the government to take steps toward making it obligatory for foreign practitioners to acquire a medical degree in Spain before being permitted to practice there.

The Far Eastern Association Of Tropical Medicine

Will hold its fourth congress at Batavia, Java, in August 1921. The president of the congress is Dr. W. Th. de Vogel, head inspector of the Civil Medical Service, in Batavia. The third congress of this association was held in November 1913 at Saigon, in Indo-China.

The Southern Medical Association,

At its meeting in Louisville, Ky., in November, elected Dr. J. L. Crook, of Jackson, Tenn., president; Drs. E. Bates Block, Atlanta, Ga., and Geo. A. Hendon, Louisville, Ky., vice-presidents; and re-elected Dr. Seale Harris, Birmingham, secretary. The next meeting will be held at Hot Springs, Ark.

T-B Vaccines.

According to the daily press, Dr. Albert Calmette, of the Paris Pasteur Institute, is working on a vaccine with which he expects to cure and prevent tuberculosis in man. The French government has such confidence in his work that it is backing him financially. The experiments are being carried out on a certain kind of ape.

Rural Virginia Needs More Doctors.

In five counties in Virginia, it is announced that there are three thousand or more people to each doctor. The cities, especially Richmond and Norfolk, are well supplied. The doctors in the State are not distributed in such a way as to best meet the needs of the people, so the State Health Department urges the need of preventive medicine and the necessity of making country life more attractive to the physician.

Dr. George E. Barksdale,

Who has been serving in the medical corps of the U. S. army for several years, has just returned to this city, where he will resume the practice of medicine. Temporarily, he will be located at 110 North Colonial Avenue. He has recently been on duty at Camp Zachary Taylor, Ky., and Camp Dix, N. J.

Dr. John C. Phipps,

Formerly of Monarat, Va., is now located at Hudson Heights, Edgewater, New Jersey.

Dr. and Mrs. Fred M. Hodges,

Of Richmond, have been recent visitors at Pinehurst, N. C.

Culpeper to Have a Hospital.

Drs. Otis Marshall and J. W. Humphries, of Culpeper, Va., have bought a lot in that place for a proposed hospital site.

Dr. C. D. Kunkel,

Pulaski, Va., has returned home after enjoying a hunt with a party of friends in Pittsylvania County, Virginia.

Two Physicians Hurt in Auto Collision.

Early this month Drs. Elton A. Ratcliffe and Lazarus Karp, both of this city, were injured in an automobile collision while hurrying to a patient. Both doctors were taken to a hospital. Dr. Ratcliffe was soon able to go home, but Dr. Karp remained a few days for observation of his injuries.

Dr. W. B. McIlwaine

Was in temporary charge of the Petersburg, Va., Health Department during the recent absence of Dr. R. A. Martin, who attended the All-America Conference on Venereal Diseases held in Washington, D. C.

Dr. J. M. Bland,

Of Boykins, Va., recently visited his old home in West Point, Va.

Dr. W. Lowndes Peple,

Of this city, made a short talk on the meaning of the Armistine Day to those actually engaged in the conflict and the abiding significance of its observance at the Armistice Day exercises at Collegiate School for Girls, Richmond, November 11.

Dr. Harry Wall,

Of Norfolk, Va., has recently been awarded a commission as captain in the medical corps of the regular army, as a result of the October examinations.

Salvarsan Fakes

Is one of the subjects that came up for discussion at the All-America Conference on Venereal Disease, held in Washington, early this month, according to a bulletin issued by

the U. S. Public Health Service. "Salvarsan (606) was devised by Ehrlich in 1910 after 605 unsuccessful experiments in trying to find a preparation of arsenic that would kill the germs in the patient's blood wthout also killing the patient. It was carefully protected by patents taken out in Germany and elsewhere, which enabled enormous prices to be charged for it. During the war inability to import it from Germany, where it was chiefly manufactured, caused the United States to seize the patent rights and to authorize manufacture in this country."

The name "arsphenamine" was adopted in an effort to standardize the drug and to prevent the sale of worthless substitutes, and licenses for its manufacture were granted by the Treasury Department to all persons complying with certain conditions. All products manufactured by the firms working under these licenses are inspected and tested by the U. S. Public Health Service. However, there seems to be no law to prevent the manufacture of substitutes bearing other names and claiming to obtain the same results. It is against these that the fight is directed.

Fire at Hospital.

In a fire which practically destroyed two wards of the U. S. P. H. S. Hospital at Camp Sevier, S. C., on the night of November 30, sixty-eight soldier patients had a narrow escape, but aided by nurses and Red Cross workers, all were moved to a place of safety and no one was reported injured.

Red Cross Clinic at Woodstock.

A Red Cross Clinic was held at Woodstock, Va., December 1 and 2 for the purpose of removing the tonsils and adenoids of the pupils of the Shenandoah County schools, in cases where operations were deemed necessary. Dr. P. W. Boyd, of Winchester was in charge and he was assisted by local physicians and nurses from the Memorial Hospital in Winchester.

Dr. R. C. Fravel

Has returned to his home in this city after a visit to his parents in Woodstock, Va.

Dr. E. W. Buckingham,

Of Lynchburg, Va., sailed from Vancouver, B. C., on December 7, for China, where he has gone as a medical missionary. He expects to spend six months in a language school before taking up his hospital work.

Dr. F. W. Lewis,

Of Morattico, Va., was a recent visitor in this city.

Pharmacy Board Revokes Licenses.

The Virginia State Board of Pharmacy has revoked the licenses of two registered pharmacists: one of these was on the charge of dispensing liquor in violation of the prohibition laws and the other was on the charge of being an habitual user of drugs.

Dr. Emory Hill

And son of this city, recently visited at the home of the doctor's mother in Scottsville, Va.

The Winchester (Va.) Memorial Hospital

Treated a total of 1,429 patients during the fiscal year ended November 25. The operating expenses were nearly $43,000 and it cost $3.15 a day for each patient, although some are charged at the rate of only $2. a day.

Correspondence Course for Teachers.

A correspondence course for teachers, to train them in a physical inspection of children and enable them in turn to impart physical instruction to their charges, has been instituted by the State Health Department. This course has been made virtually necessary under the provision of the "West" bill which looks to a time in the near future when no teacher may secure a certificate or have one renewed unless he or she can exhibit proficiency in the elemental facts concerning physical education.

Miss Mary I. Bell, who has been instructor in hygiene and librarian at the State Normal School, in Harrisonburg, Va., will be attached to the State Health Department but will work under regulations jointly approved by the State Board of Education and the Health Board.

"State Surgeon".

Dr. Robert C. Bryan, of this city, who saw active service in the World War, has been appointed by Governor Davis as head of the medical department of the National Guard of Virginia, with the rank of major and with the official title of "State Surgeon", in military circles.

Dr. U. G. Jones,

Of Marion, Va., is taking a post-graduate course on diseases of the eye, ear, nose and

throat at the Manhattan Eye, Ear, Nose and Throat Hospital, New York City.

Automobile Fatalities.

Reports from the Bureau of Census show for 1919 a total of 3,808 deaths from automobile accidents in the United States, in cities of 100,000 and over, or a rate of 14.1 per 100,000. It is worthy of note that the lowest death rate from automobile accidents for 1919 was in Richmond, where the rate was only 5.9 per 100,000. To decrease the rate, the Bureau suggests a constant improvement in traffic regulations to keep pace with the ever increasing number of automobiles.

Tucson Hospital Being Enlarged.

The U. S. Public Health Service is enlarging its hospital at Tucson, Ariz., so as to provide for 200 additional patients and for the necessary increase in hospital personnel. This enlargement is necessary to accommodate the large increase in the number of patients in this vicinity.

Dr. Robert T. Glassell,

Formerly of Bowling Green, Va., has located at Jewell Ridge, Va., where he is surgeon for the mines.

Lt. Col. T. C. Quick, M. C.,

Formerly of Falls Church, Va., is now in charge of the U. S. P. H. S. Hospital at Buffalo, N. Y.

Dr. B. L. Carleton,

Formerly of Laneview, Va., has located in Newport News, Va., with offices at 113 Thirty-First Street.

McGill University Interested in Anesthesia.

We note that McGill University, Montreal, is materially strengthening its courses in the subject of anesthesia by increasing both the number of lectures and recitations in this branch of medicine. Dr. Wesley Bourne, of Montreal, who is especially interested in this work, has already begun a survey of the hospitals and colleges of Canada with a view of finding just what work is being given in these institutions.

Dr. Thomas F. Gill.

Who has for some years practised at Marshall, Va., has located at 721 Edgewood Avenue, Richmond, in which city he will continue to practice his profession.

Christmas Seals.

Have you bought Xmas seals and in this way contributed toward the fight against tuberculosis in Virginia? If not, they may yet be had as the sale lasts through December 31. The proceeds of the sales will, in large proportion, be used locally to fight tuberculosis. It may be interesting to note that the double barred cross which the seal bears is the official emblem of the National Tuberculosis Association. It was first adopted as the International emblem of the fight against tuberculosis at a conference in Paris in 1902.

Savannah to have T-B Hospital.

The Chatham-Savannah (Ga.) Tuberculosis and Benevolent Association own a site of twenty acres. A recent gift of $20,000 from Grantham Taggart, a wealthy resident of that city, assures the early erection of a tuberculosis hospital in Savannah. Mr. Taggart will also erect two huts to cost about $2,000 each, which will be dedicated to his children.

Surgeon General Braisted to Retire.

Rear Admiral W. C. Braisted, surgeon general of the U. S. Navy since 1914, was placed on the retired list the last of November and was succeeded by Rear Admiral Edward R. Stitt. Dr. Stitt is 53 years of age and a graduate of the University of Pennsylvania, School of Medicine, in 1889. He is considered an authority on tropical diseases and at the time of his appointment was head of the naval medical school in Washington.

A Research Information Bureau.

The National Research Council has established a Research Information Service as a general clearing-house and informational bureau for scientific and industrial research. This "Service" on request supplies information concerning research problems, progress, laboratories, equipment, methods, publications, personnel, funds, etc. Ordinarily inquiries are answered without charge. When this is impossible because of unusual difficulty in securing information, the inquirer is notified and supplied with an estimate of cost.

Requests for information should be addressed, Research Information Service, National Research Council, 1701 Massachusetts Avenue, Washington, D. C.

St. Louis University Appeals for Funds.

St. Louis University, the oldest seat of

learning west of the Mississippi River, has for the first time in its more than a century of endeavor made a public appeal for funds, the larger portion of which are to be applied to the support of the Colleges of Medicine and Dentistry. It is asking its alumni and friends to raise the sum of $3,000,000 as a Centennial Endowment Fund, in commemoration of the 100th anniversary of the founding of the institution. The anniversary occurred in 1918, but because over 3000 of the undergraduates and alumni were in the service, the celebration was postponed until conditions were more nearly normal. This University holds the distinction of having established in the great Louisiana Purchase tract the first Colleges of Medicine, Dentistry, Law, and Commerce.

It is hoped by the Faculty that old graduates of the Medical and Dental Colleges of the University, who are now scattered all over the world, will appoint themselves a committeee of one to aid their Alma Mater to realize the Centennial Fund.

Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examinations on December 28, 1920, for associate in clinical pychiatry and psychotherapy, at an initial salary of $2,500 a year and maintenance:

On January 11, 1921, for chief, section of medical referees, at a salary of $4,000 to $6,000 a year;

On April 5, 1921, for roentgenologist at $200 to 250 a month, associate roentgenologist at $130 to $180 a month, assistant roentgenologist at $90 to $130 a month, junior roentgenologist at $70 to $90 a month. In addition to these salaries, quarters and subsistence will be allowed when possible or an increase in salary to cover these in part.

For detailed information, write the above Commission.

Reinstatement of War Risk Insurance.

We have been requested to call the attention of former service men to the fact that War Risk Insurance may still be reinstated and converted. For additional information or official application forms, write to Bureau of War Risk Insurance, R. G. Cholmeley-Jones, Director, Treasury Department, Washington, D. C.

Not Married.

Dr. Basil B. Jones, whose marriage was announced in our November issue, informs us that he has not that distinction. The party in question was a Mr. Basil Jones.

Dr. Jones further states that he is "still foot loose and fancy free" and has been residing safely in Boston, Mass., since October the first.

Dr. Edward McGavock,

Of Richmond, has been the recent guest of friends in Lynchburg, Va.

The Alvarenga Prize,

Amounting to about $250, will be awarded July 21, 1921, provided an essay shall have been submitted which the Committee of Award shall deem worthy. These essays may be upon any subject in medicine but shall not have been published. They should be typewritten and, if in any but the English language, shall be accompanied by an English translation. Each essay must be sent without signature but must be marked with a *non de plume* and be accompanied by a sealed envelope bearing on the outside this fictitious name and within must be given the name and address of the author. This essay shall be in the hands of the secretary of the College of Physicians and Surgeons, before May 1, 1921. Address John H. Girvin, M. D., Secretary, 19 South Twenty-second Street, Philadelphia, Pa.

Obituary Record

Dr. Moses Drury Hoge, Jr.,

One of the best known physicians of Richmond, died at his home November 24, after an illness extending over about a year. He was a son of the late Rev. Moses D. Hoge, D. D., for fifty-four years pastor of the Second Presbyterian Church of this city.

Dr. Hoge was born in Richmond fifty-nine years ago. After studying at Hampden-Sidney College and the University of Virginia, he went to Germany and studied medicine at the University of Berlin and later at the University of Heidelberg, graduating from the last named in 1886. He then returned to this country and practiced in this city until forced to retire on account of his health. He was prominent in the civic affairs of Richmond and was for many years a member of the City

Board of Health and of the City School Board. He was a member and ex-president of the Richmond Academy of Medicine and a member of the Medical Society of Virgnia. He was one of the pioneers in this State in microscopy and did much special work in this line. He was also professor of clinical diagnosis in the former University College of Medicine, in this city. During his professorship, he published two manuals on subjects in which he was especially interested. Dr. Hoge was one of the founders of Sheltering Arms Free Hospital in this city.

To know him intimately was but to love him, for Dr. Hoge possessed many attributes of mind and character of sterling worth. He was generous to a fault and charitable in his estimate of others. There are many friends who mourn his death.

He is survived by his wife who was Miss Alice Aylett, of King William County, Va., and four children.

Dr. Morton G. Douglas,

A prominent citizen and one of the leading physicians of Warrenton, Va., died suddenly November 14, while attending services at the Episcopal church in that place. Dr. Douglas was a native of Zanesville, Ohio, having been born in that city in 1869. After finishing his preliminary education at the schools in that place, he entered the University of Maryland, from which he received his diploma in medicine in 1895. He shortly thereafter located in Warrenton, where he had since made his home. He became a member of the Medical Society of Virginia in 1898. Dr. Douglas is survived by his wife, father and a sister.

Dr. Godfrey Lewis Miller,

Of Winchester, Va., and for more than sixty years an active practitioner, died December 2, at the age of 85 years. He was a graduate in medicine from the former Winchester (Va.) Medical College in 1859. During the War between the States, with the rank of captain, he was in general charge of the Confederate hospitals in Winchester and, after the war, was retained by the U. S. government to attend the wounded Federal soldiers there. He is survived by two sons.

Dr. Allen Carter Jones,

A prominent physician of Newport News, Va., died at his home in that city, November 9, from pneumonia. He was sixty-three years of age and a member of the Medical Society of Virginia. Dr. Jones studied medicine at the Medical College of Virginia, Richmond, from which he received his diploma in 1878.

Dr. Otto F. Richter,

Of White Sulphur Springs, W. Va., died at his home at that place November 10. He was fifty-seven years of age and received his medical education at the Medical College of Virginia, from which he graduated in 1884.

Dr. John Beale Gardner,

Formerly of Fredericks Hall, Va., died at his home in Washington, D. C., November 18. He was ninety years of age and a graduate of the Medical College of Virginia in 1856. He is survived by several children.

Dr. James C. Meredith

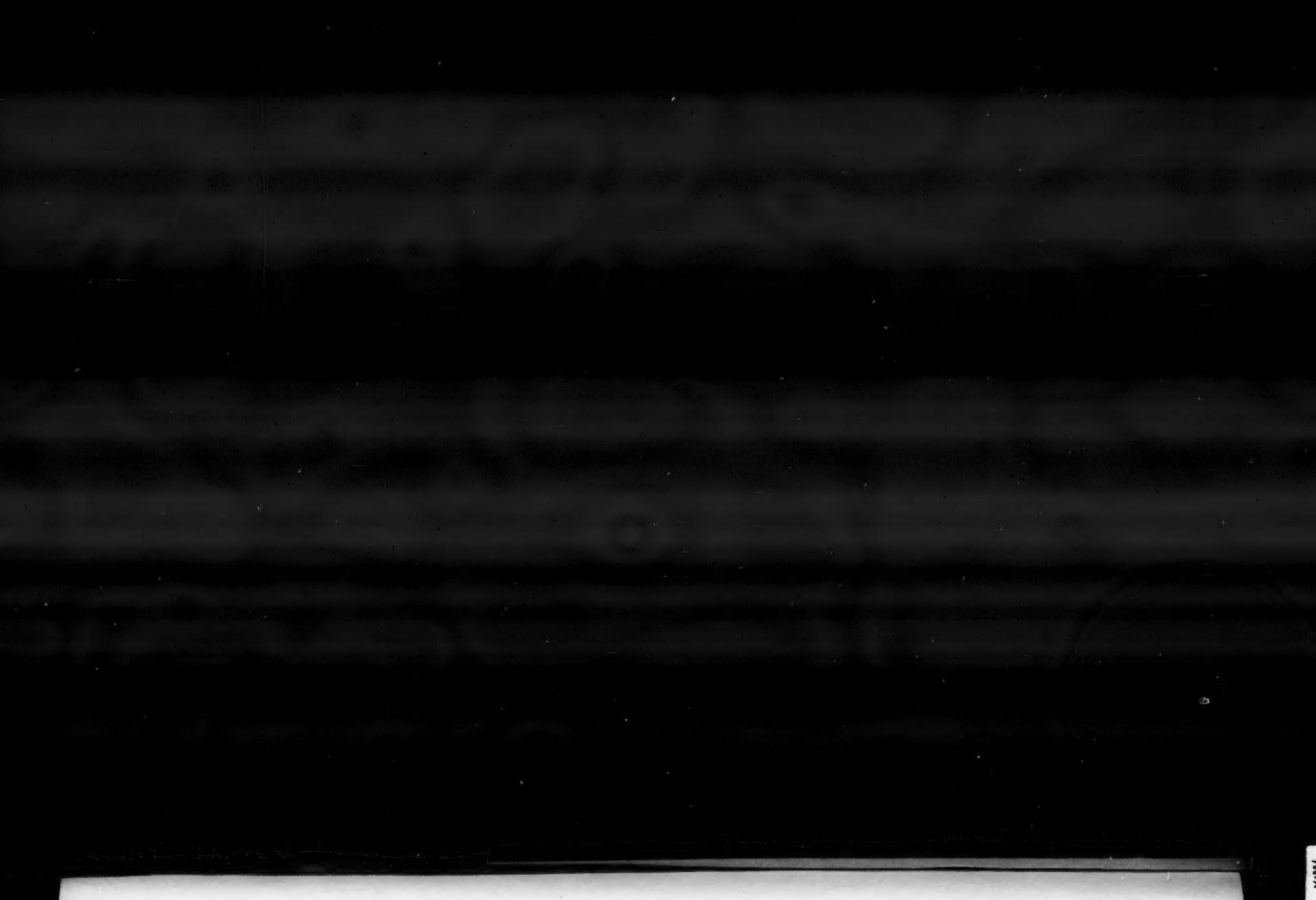
Died at his home, Manassas, Va., September 22, 1920. He was seventy-two years of age and a graduate of the College of Physicians and Surgeons, of Baltimore, Md., in 1885. Dr. Meredith was a member of the Medical Society of Virginia.

Dr. J. R. Spencer

Died at his home at Hollins, Va., early this month. He was 56 years of age and a graduate in medicine of the New York University Medical College in 1888. He had been a member of the Medical Society of Virginia for some years. Dr. Spencer formerly made his home in Farmville, Va., and the interment was made there. He is survived by his wife and one sister.

Dr. James Burrow,

Son of Judge and Mrs. Robert Burrow, of Bristol, Va., died December 5, in a hospital at Ancon, Panama, aged 26 years. Death was due to cirrhosis of the liver. He was a graduate of the medical department of the University of Pennsylvania, and was a surgeon in the government hospital at Ancon. The interment will be made at his former home.

Dr. Harrison L. Harris, Sr.,

One of the oldest and most prominent of the colored physicians of Richmond, died November 19, at the home of his daughter in Petersburg. He was sixty-five years of age and a graduate of the Howard University School of Medicine, Washington, D. C., in 1882.